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image and imagination

Al-Ghazālī

Aleksandr Ostrovsky

Latin America in European painting

Reckoning with the abacus

Filial piety in ancient China

Breakthroughs in brain research

Science and tradition

Photo © IFAD, Rome

A time to live...

48 Gambia

Land for women

Women living in rural areas are the invisible farmers of the Third World. In Africa alone they produce, process and store almost 80 per cent of food destined for family consumption. Along with other organizations, the International Fund for Agricultural Development (IFAD), which was created in 1977 to increase food production and income of rural populations in developing countries, is co-operating with Third World governments and other institutions in projects to improve conditions for these women. In Gambia, where the Government had launched a project to boost rice production, IFAD supported the women who traditionally grow and harvest rice in the marshes along the Gambia River (above) during successful negotiations to obtain rights relating to the land they cultivate when this land was redistributed. As a result of land redistribution and the draining of the marshes, rice production was increased sixfold, benefiting 15,000 persons in 40 villages.

UNESCO
The Courier
A window open on the world

Editorial

THE fresco of mental images peoples create of themselves and the world they live in—the main theme of this issue of the *Unesco Courier*—owes much to the lessons they have learned from their history. Sometimes this "popular imagination" focuses on a great man or woman. Two such outstanding figures are commemorated in the following pages: the great Islamic scholar and man of faith al-Ghazālī; and Aleksandr Ostrovsky, the contemporary of Tolstoy and Turgenev who was one of the founders of the Russian theatre, which has made such a notable contribution to our understanding of the human soul.

The collective imagination is also a product of the interaction between different ways of perceiving and describing the world. In this process, a "transfer of images" takes place in which a community assimilates, sharpens or deforms its conception of other peoples and civilizations. One illustration of this phenomenon, described in this issue by Miguel Rojas Mix, is the way in which depictions of the American continent by European artists over the centuries have sometimes—but not always—been distorted by projections of European concepts and values. Likewise, a comparison between the cult of filial piety in China and certain religious practices in the West casts a revealing light on differences and similarities between two civilizations.

Imagination is inevitably rooted in the world of practical knowledge. An instrument such as the Japanese abacus can be used with amazing technical virtuosity as a calculating instrument; it also opens up far wider horizons of mental activity which stretch beyond the processes of arithmetic. Recent developments in brain research are showing a similar form of interdependence, as they stress the importance of "co-operation" between the rational and the intuitive functions of the brain's two hemispheres. In the same strain, it is now being realized that science and tradition are not mutually exclusive, and that the most advanced discoveries of science can be enriched by the deepest roots of tradition.

Finally, the imagination of peoples also shapes their future, tracing a design for development which they alone are equipped to define. Peoples can only advance towards self-fulfilment when they draw on the vitality of their imagination and the dynamism of their culture.

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39th year

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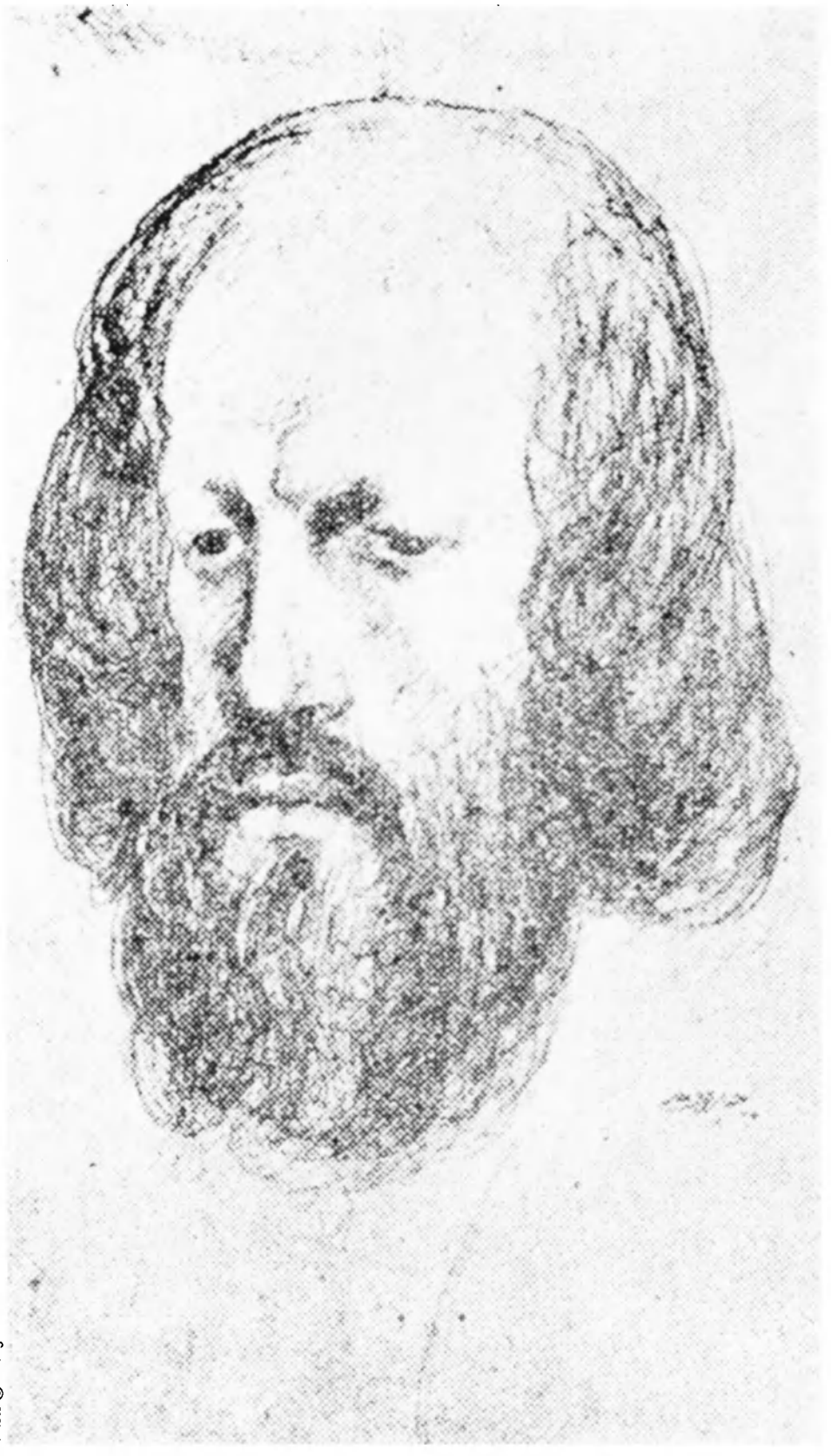
Al-Ghazālī: From philosophy to mystical experience



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Portrait of al-Ghazālī by the Lebanese writer, mystic thinker and poet Gibran Khalil Gibran (1883-1931), who emigrated to the United States at the turn of the century. Gibran's most noted work,* The Prophet *(1923), was widely successful and has been translated into 34 languages.

AL-GHAZĀLĪ's whole life seems to have been guided by his determination to restore the faith of the Muslims to its original purity and vigour. This he attempted to do by taking up one by one the challenges with which Islam was then faced, deriving strength for his great work, which he entitled "The Revival of the Religious Sciences", from those challenges themselves. In writing this work, he drew most admirably on all the intellectual resources provided by the accumulated intellectual knowledge of his time.

He began by making an exhaustive study—which was to take him ten years—of all the intellectual traditions established over the previous period, systematically subjecting them to critical analysis but acknowledging that each one contained some measure of wisdom and validity.

The development of his thinking at this stage seems to have brought him to that critical point in his life where, having attained the summit of contemporary learning, he began to reflect on the possibility of acceding to a realm beyond all rational knowledge leading, through the teachings of Sūfism, to a state of receptivity to the ultimate divine truth.

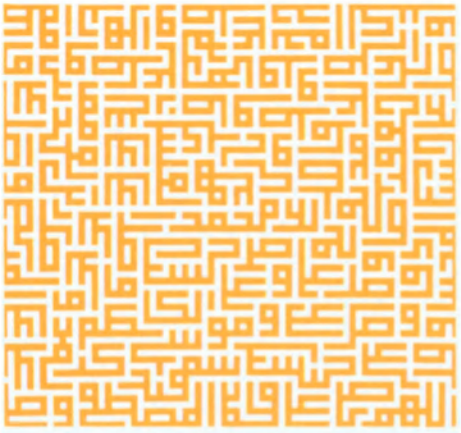
He felt that he was invested with one last mission in life—to show his contemporaries the light which he had so long and so arduously sought and which had at last been so fully bestowed upon him. In his eyes, the mystical experience gave an overall meaning to the truest intuitions contained in the various schools of thought of his time, while breaking through the boundaries within which each of them was confined.

He thus left us a work of rare breadth and generosity, testimony to an exacting faith served by an exceptional intelligence and dedicated to the teaching of men of his own generation as well as to the teaching of generations to follow. In the development of his thought, knowledge was always directed towards serving the faith, and conviction was constantly reinvigorated by a critical spirit.

His influence was and still is very great in the Muslim world, where he is seen by the most erudite as one of those exceptional Muslims whose thinking retains its vitality and who have fully harmonized their teaching with their own personal experience.

In the West, his influence was considerable although it was some time before the entire significance of his work was fully perceived. He was one of the first Arab authors to be translated into Latin in medieval Europe, and was first known there through his book *Maqāsid al-Falāsifah* ("The Aims of the Philosophers"). This treatise was translated in Toledo by one Master Johannes in the second half of the twelfth century.

His account of Aristotelian logic, metaphysics and physics, which he based on an abridged version of Ibn Sīna's "Great



Drawing Hassan Massoudy © *Calligraphie arabe vivante* Flammarion, Paris

The spiritual quest of al-Ghazālī

by Abdurrahmān Badawi

The decorative qualities of the angular and geometric Kūfic style of Arabic calligraphy has led to its widespread use for religious inscriptions carved in stone. Above, reproduction of a Kūfic inscription inside a mausoleum at Isfahan (Islamic Republic of Iran). Highly stylized into square and rectangular forms, the calligraphy of this inscription dating from the early 14th century seems to evoke certain trends in modern graphic design.

ABŪ Hāmid al-Ghazālī, a great theologian, a penetrating and subtle critic of rationalist philosophy and a mystic with great gifts of psychological and moral analysis, was born in 1058 in Tūs, today called Meshhed, in eastern Iran, and died in 1111. One of the greatest thinkers humanity has ever known, he was honoured with the title *hujjat-al-islām* (Proof of Islam) for his role as a defender of religion against the rationalist atheism of the philosophers and of orthodox Islam against sects preaching heresy and subversion. The lucidity of his writings and the beauty of his prose were such that his works were widely circulated and won a very extensive readership. His masterpiece, entitled *Ihyā' 'ulūm al-dīn* ("The Revival of the Religious Sciences"), was, and is still, a reference work on the principles and practice of the Muslim religion.

There were three stages in al-Ghazālī's spiritual development: a stage of practical involvement and political commitment, a stage of doubt and criticism, and a mystical stage.

Having received a sound training in case law and theology from the great masters of his time, and primarily from the Imām al-Haramayn (al-Djuwainī), al-Ghazālī went to seek favour with the great vizir Nizām al-Mulk in Naysābūr. The latter was impressed by al-Ghazālī's learning and cogency in debate, and, as an earnest of his admiration, he apppointed him in 1091 to teach at the Nizāmiyyah school in Baghdad. One year later, Nizām al-Mulk was murdered by a young Bātinite. The Bātiniyya was a Shi'ite sect, the militant branch of the Ismā'ili sect. During and after the crusades, its members were known by the name of *hashishi*. The activities of the Bātinites posed a serious threat to the Abbasid caliphate in Baghdad.

The Caliph al-Mustazhir accordingly instructed al-Ghazālī to wage war with his pen against the Bātinite sect. Al-Ghazālī wrote a book entitled the *Mustazhirī*, or *The Depravity of the Bātiniyya*, in which he revealed its impostures and unmasked its evil designs against Islam and its great conspiracy against the State. This work analyses in ▶

Encyclopaedia", circulated widely in Europe during the thirteenth century. By contrast, his refutation, contained in the masterly *Tahāfut al-Falāsifah* (translated by some as "destruction" and by others as the "incoherence" of the philosophers), was not known until much later, and even then only indirectly through the criticism made of it by Ibn Rushd in *Tahāfut al-Tahāfut* (translated in the Middle Ages under the title "Destructio Destructionis").

In the second half of the thirteenth century, a Catalan preaching friar, Ramón Martí, who devoted himself to the study of oriental languages, became acquainted with several Arabic works by al-Ghazālī and quoted in particular the *Tahāfut* and the *Munqidh min al-dalāl* ("The Deliverer from Error"). Here, at last, al-Ghazālī's thinking appears to have been faithfully reproduced; but Ramón Martí's works seem to have been reserved mainly for the use of his fellow friars.

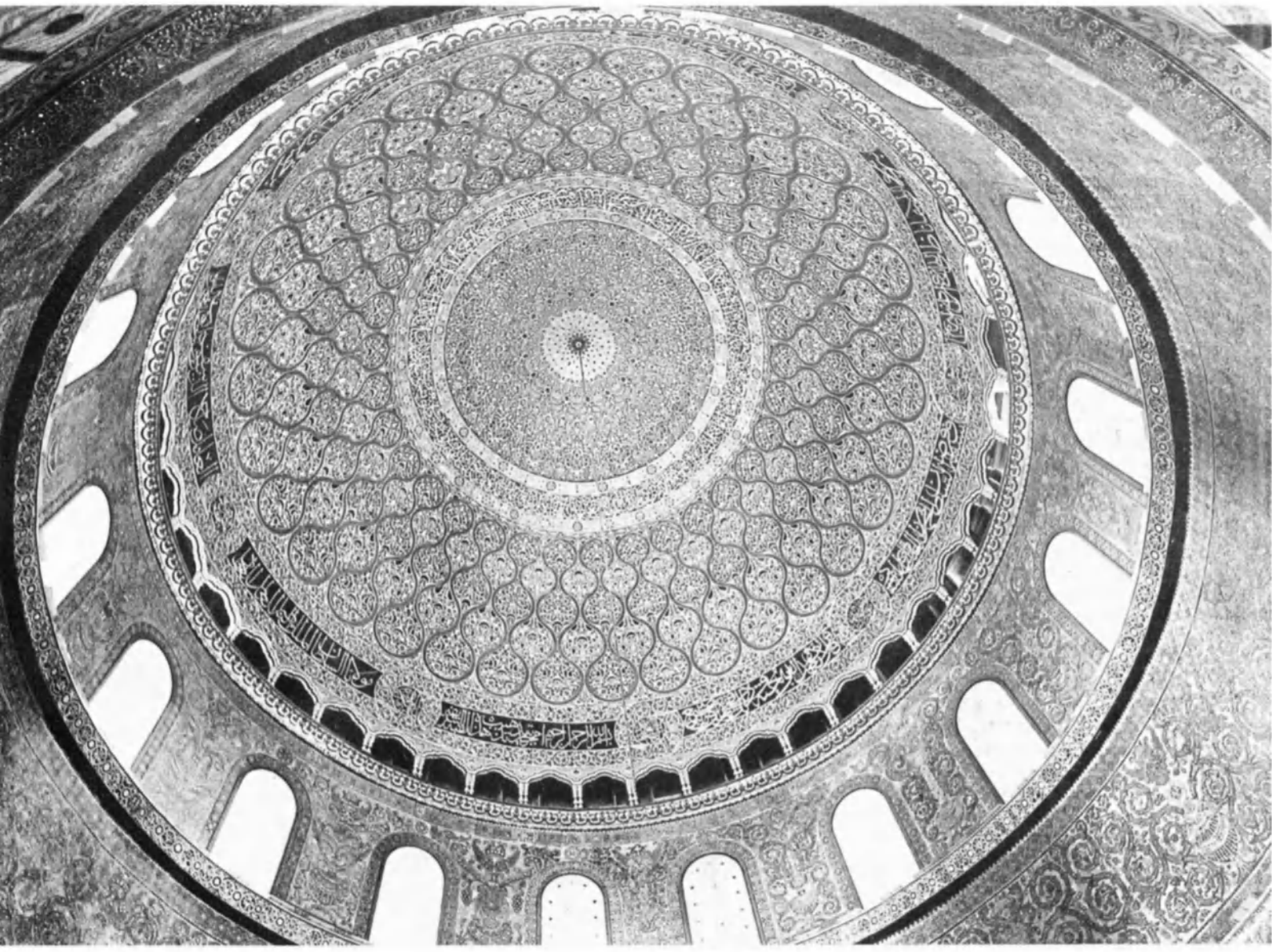
In 1328, Robert of Anjou, King of Naples, requested a scholar from Arles, Carlo Calonymos, to translate the *Tahāfut al-Tahāfut* in which Ibn Rushd began by giving an objective account of al-Ghazālī's main ideas and then proceeded to criticize them. This gave Europe a fresh opportunity to become acquainted with the real thinking of al-Ghazālī—but for a long time Calonymos' translation remained practically unknown. Not until the end of the fifteenth century and the Renaissance was a new version of Ibn Rushd's book printed and widely circulated in Italy. Only then did al-Ghazālī's work, and the full significance of his thinking, begin to be known in Europe.

What, today, in general terms, are the lessons to be learned from his thinking, even outside the Islamic world? First of all that al-Ghazālī can be seen as a unique witness of an age distinguished by great intellectual turmoil and by much questioning about ultimate aims in relation to the realities of social life.

This is certainly where the evolution of al-Ghazālī's thinking, which played so important a role in the development of Western thought, can still be a source of inspiration today.

Al-Ghazālī reacted to the challenges of unprecedented intellectual, scientific and technological development and to its psychological and social consequences, both *per se* and in regard to the faith, by adopting an approach that was exemplary in its scrupulousness. Enlightened by the most progressive knowledge of his time, he embarked on the path of luminous spirituality and intellectual revival which gave to culture its most creative stimulus. ■

This article is a slightly shortened version of an address given by the Director-General of Unesco on 9 December 1985 at Unesco Headquarters in Paris, during a symposium on al-Ghazālī.



In 1095, after being embroiled in a religious controversy with the Islamic philosophers, al-Ghazālī experienced a period of doubt. He went on a pilgrimage to Mecca and visited Jerusalem, where he began to write his masterwork* Ihyā' 'ulūm al-dīn *("The Revival of the Religious Sciences"), which he completed during a two-year stay at Damascus. Above, elaborate mosaics on a golden background adorn the cupola of the Dome of the Rock, the shrine built in Jerusalem in AD 691 by the Umayyad caliph 'Abd al-Malik. The shrine is built over a flat sacred rock which many traditions connect with Abraham and Muhammad. Right, the Great Mosque of Damascus (Syria) was built in AD 705, also under the Umayyads, on the site of the Byzantine church of St. John the Baptist and of a Roman temple once dedicated to Jupiter.

▶ detail the sect's stratagems to attract well-wishers and rally them to its cause, for the Bātinites were skilled at making converts.

At the age of thirty-four, al-Ghazālī began to study philosophy. He then entered a period of profound spiritual crisis in which he came to doubt his faith. That doubt was transient and lasted for only two or three months. It was more a "dark night of the soul" than the methodical type of doubt practised by Descartes, as some scholars have mistakenly suggested. But that doubt was a goad which spurred him to subject his beliefs to unrestricted scrutiny. In *Mīzan al-amal,* he asserts the usefulness of such doubt, for "he who does not doubt, does not think; he who does not think, does not see; he who does not see remains in a state of blindness, perplexity and error".

Being blessed with a positive attitude of mind, he could not remain in a state of doubt for very long. Thus we see him entering a new phase: that of certainty based on reason. He had found a new vocation, which drove him to defend the great articles of faith against the rationalism of the Islamic philosophers, including al-Fārābi and in particular Ibn Sīna (Avicenna).

By way of a prologue to his diatribe against the philosophers, he wrote for the layman a clear and easily grasped summary of the three principles of philosophy: logic, physics and metaphysics. That summary is entitled *Maqāsid al-Falāsifah* ("The Aims of the Philosophers"). It is a brief and limpid exposé, unclouded by polemic or personal opinions.

This was the prelude to his philosophical masterpiece, *Tahāfut al-Falāsifah* ("The Incoherence of the Philosophers"), in which he launches a sustained attack on the rationalist philosophers. As he states in the prologue, this book is a refutation of the ancient philosophers, designed to prove the falsity of their doctrines, to expose their contradictions in the sphere of philosophical theology (metaphysics) and to reveal the dangers inherent in their opinions.

In this work, he claims that between the different philosophers there are huge divergences, and bitter conflicts between the different systems. He therefore confines himself—as he says—to a refutation of the philosophy professed by the greatest of them, namely, Aristotle.

According to al-Ghazālī, Aristotle and philosophers in general "judge by conjecture and presumption, and not by verification and certainty" in the field of metaphysical theology. He therefore sets out to ▶

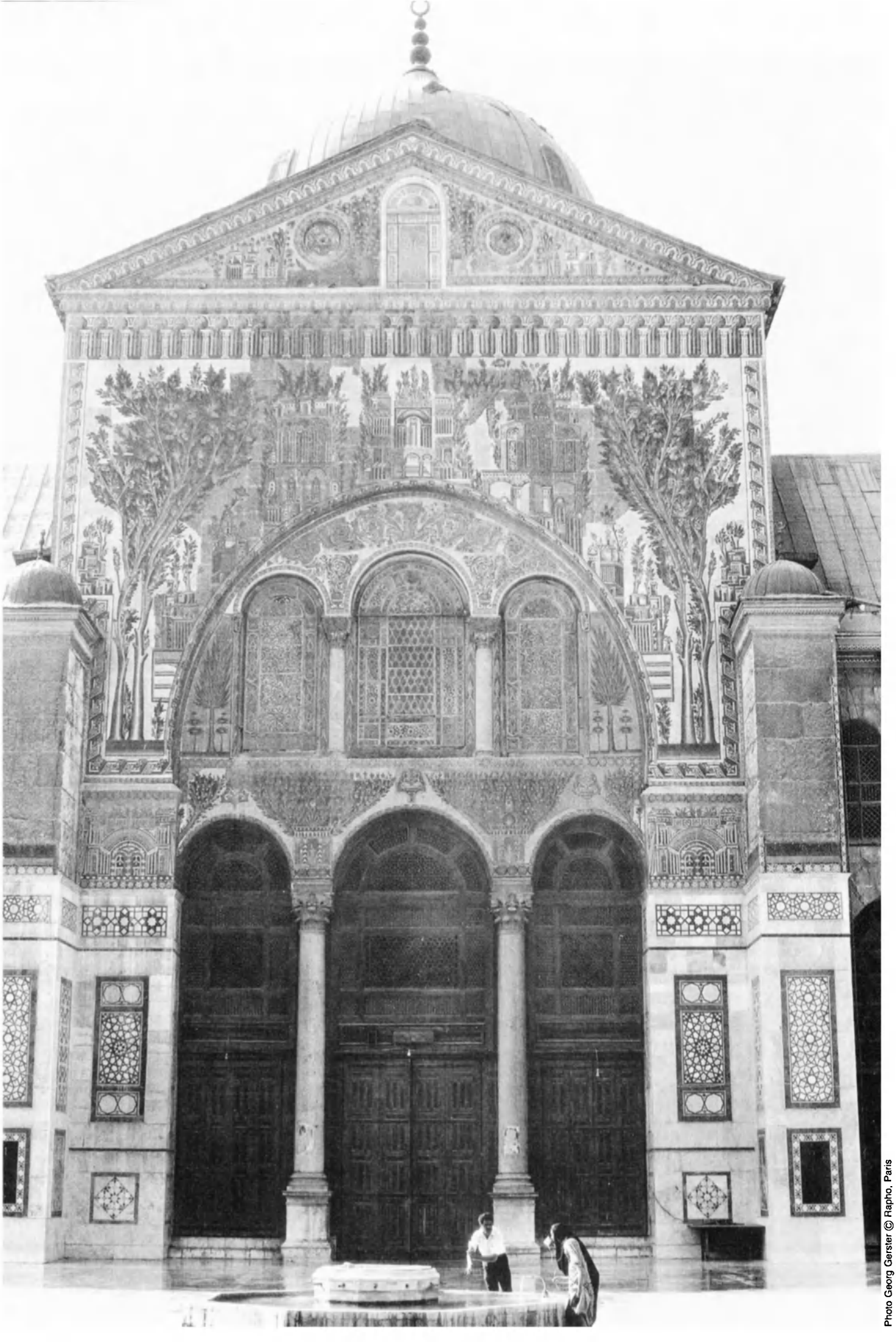


Photo Leonard Freed © Magnum, Paris

Photo Georg Gerster © Rapho, Paris

Photo Georg Gerster © Rapho, Paris

The modern town of Meshhed, near the eastern border of the Islamic Republic of Iran, is an offshoot of the ancient city of Tūs, the birthplace of al-Ghazālī, which was destroyed by the Timurids in 1389. As the site of the mausoleum of the Imām Ali Reza, eighth Imām of the Shi'ites (died AD 818), and of the adjoining mosque of Gawhar Shād (15th century), Meshhed is the Holy City of the Shi'ites and a major pilgrimage centre. Above, enamelled tiles cover minaret and porch of the Shāh Mosque (14th century).

Below, the four minarets of the Kāzimayn Mosque, one of the most beautiful in Baghdad, which became the seat of the 'Abbāsid caliphate in AD 750, and was the greatest religious and economic centre of the Near East until it was sacked by the Mongols in 1258. Al-Ghazālī taught law in this prestigious city before applying himself to the study of philosophy, then embarking on the path of Sūfī mysticism.

Photo Georg Gerster © Rapho, Paris

▶ prove the falsity of their ideas in the following fields:
The eternity of the world.
The creation of the world.
The proof of the existence of God.
The attributes of God.
Divine knowledge.
The movement and the prime mover of the Heavens.
The possibility of miracles.
The immortality of the human soul.
Resurrection and life after death.

After a disputation with the philosophers on these topics, he concludes with a condemnation of the following three theses: their assertion that the world is eternal; their assertion that God does not know particulars, i.e. the acts of human beings; their denial of resurrection and eternal life.

"These three theses are wholly incompatible with Islam. Anyone who professes belief in them is thereby claiming that the prophets are liars and that they made their pronouncements only for utilitarian purposes, using parables for the sake of clarity. But this is a manifest heterodoxy (*kufr*)." (*Tahāfut*)

As regards the remaining theses, al-Ghazālī finds similar tenets in the various Muslim sects; they are therefore not incompatible with Islam.

Some scholars have claimed that al-Ghazālī's attacks on the philosophers who had upheld these three theses struck a mortal blow to philosophy in the Islamic world. This allegation is quite false since, during the century which followed al-Ghazālī's death, Muslim philosophy reached its apogee in Muslim Spain with Ibn Bājja, Ibn Tufayl and Ibn Rushd (Averroës), and continued to advance in the East with Suhra-Wardi, Bawwānī and Mulla Sadra.

Al-Ghazālī argued with the philosophers "using their own method, that is, a logical, rational and rigorous method". But in the depths of his soul he felt that reason was not enough to attain the supreme truths of religion. He realized that he needed to use quite another faculty in order to penetrate directly to the heart of the mystery of being. In 1095 he experienced another crisis, much more acute than the first, whereupon he abandoned his teaching at the Nizāmiyyah school in Baghdad and set out on the pilgrimage to Mecca. After (or before) that pilgrimage, he visited Damascus and Jerusalem. In Jerusalem he began to write his masterpiece, the *Ihyā'* ("The Revival of the Religious Sciences"), which he completed in Damascus during the two years that he spent in that city.

After Damascus he returned, in 1097, to his native town of Tūs, where he had resolved to end his days in mystical retreat. But the vizir of Korāsān, Fakhr al-Mulk, son of Nizām al-Mulk mentioned earlier, invited al-Ghazālī to take up teaching once more. Al-Ghazālī demurred, but the vizir was insistent. Al-Ghazālī therefore began to teach again, not at the Nizāmiyyah of Baghdad, but at that of Naysābūr, after an eight-year retreat. However, one year later, in approximately 1106, he returned to Tūs in order to devote his time to writing several mystical treatises, including the *Mishkāt al-anwār* ("The Niche for Lights"). He also wrote his autobiography there, *Al-Munqidh min al-dalāl* ("The Deliverer from Error").

In the *Mishkāt,* al-Ghazālī draws inspiration from a verse of the Qur'an which proclaims that "God is the light of the heavens and the earth", and reveals a vision of a world structured around the concept of light. He shows how that divine light suffuses and sustains the world with its countless rays. The world is accordingly represented as a pure crystalline sphere, scattered with opaque points of matter.

The *Munqidh,* his autobiography, is a masterpiece of remarkable psychological insight. It retraces his spiritual development and uncompromisingly dismisses jurists, theologians, Bātinites and philosophers alike, reaching the conclusion that the only true Way is that of the mystics. Compared with the *Confessions* of St. Augustine, the *Munqidh* is more concentrated, but more precise and structured. It is free of the grandiloquence and prolixity that we find in the Bishop of Hippo.

The influence of al-Ghazālī was tremendous, both in the Muslim world and in medieval Europe.

Six of his works were translated into Hebrew in the thirteenth century. Some, including the *Maqāsid,* were even translated several times. Jewish philosophers influenced by al-Ghazālī include Isaac Albalag, who translated the *Maqāsid,* Moses of Narbonne, who wrote a major commentary on the same work, and Jehudah Halevi, who makes abundant references to the treatise entitled "The Grounds of Belief" (later incorporated into the *Ihyā'*). David Yehuda Léon even goes so far as to claim that Maimonides drew on the works of al-Ghazālī as his main source of inspiration.

The *Maqāsid* was translated into Latin in the twelfth century by Domingo Gundisalvo, a well-known translator of the Toledo school. The *Tahāfut (Destructio philosophorum)* was likewise translated into Latin, together with its refutation *(Destructio destructionis)* by Averroës in about 1325.

What influence did the works of al-Ghazālī exert over the thinkers of the late Middle Ages and the Renaissance? This has still to be determined. However, we reject the parallels that have been drawn—wrongly, in our opinion—between the method of approach of al-Ghazālī and that of certain modern European philosophers: between the doubt of al-Ghazālī and that of Descartes, for example, and between the conceptions of causality found in al-Ghazālī and in David Hume. These are empty hypotheses, totally without foundation. ■

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Aleksandr Ostrovsky

Founding father of Russian theatre

by Nelly Kornienko

SOMETIME in the autumn of 1849, in the famous Moscow literary salon of Countess Rostopchin, an elegant, fair-haired man of twenty-six read his play *Bankrot* ("The Bankrupt") to an audience of distinguished literary figures including the great Nikolai Gogol. More readings of this work, which had opened the doors of Moscow's salons to its author, were soon delighting the evening patrons of the city's cafés and taverns, but the imperial theatres remained immune to the enthusiasm felt by the new playwright's first admirers. Tsar Nicolas I banned the play and had its author, Aleksandr Nicolaevich Ostrovsky (1823-1886) watched by the police. His sixth play was the first to be staged and all its successors had problems with the censor.

The author of some fifty plays, Ostrovsky is the creator of the Russian "comedy of manners" and the founder of the repertory of the Russian theatre. He was born and grew up in the Zamoskvorechye commercial district of Moscow, away from the city's major thoroughfares. Destined by his father for a career in commerce, the young Ostrovsky's first employment was with the Moscow civil court. His youthful observations of different types of merchants and the setting in which they lived were to provide him with material for most of his plays.

In face of obstinate, ignorant, despotic money-grubbers respectful of the established order, conformists such as Podkhaliuzin, Bolshov and Kabanikha, he sets figures on a par with such great characters of the European drama as Hamlet, Karl Moor or Laurencia, the creations of Shakespeare, Schiller and Lope de Vega.

In *Dokhodnoe Mesto* (1857, "A Profitable Post"), Zhadov champions those who go "against social customs and conditions... The struggle is arduous and often fatal, but the glory for those who win through and the gratitude of later generations is all the greater.... Without them lies and evil would have proliferated to hide the sun's light from men". In *Les* (1871; *The Forest*, 1926), the tragedian Neschaslivtsev proclaims that "honour is boundless", and Parasha, in *Gorzhacheiya serdce* (1869, "A Yearning Heart"), asserts for all to hear, "You can take away all I have but I shall never give up my freedom. .... For my freedom I would go to the scaffold."

The tragic end of Ostrovsky's finest characters always springs from their rectitude, their purity, their nobility of spirit, their moral integrity and their conviction that love is the ultimate meaning of life. In this respect Ostrovsky echoes the preoccupations of Dostoyevsky, for whom beauty will save the world, or the law of love and the vocation of goodness dear to Tolstoy.

Ostrovsky wished "to put the people on the right path without harming them". Because of the logic of the plot, people who make their mark in life through hypocrisy and duplicity often triumph in his plays. But the real victors are losers like Katerina, who is incapable of living dishonestly and throws herself into the Volga, or Larissa, the girl without a dowry whose fine talent has been brought to nothing by the vulgarity of life and who murmurs "Thank you" to Karandychev, her murderer and saviour, before she dies. Ostrovsky wants a person who rebels against oppression and arbitrariness, a free spirit, to become the "law of life".

It should thus come as no surprise that circles close to the court of the Tsar, suspicious of culture and the theatre and apprehensive of new ideas, stopped at nothing to prevent Ostrovsky's heroes from being portrayed in the theatre, even though they might admit that Ostrovsky himself was not without talent. It was said contemp- ▶

Photo © APN. Moscow

"You alone have completed the edifice whose foundations were laid by Fonvizin, Griboyedov and Gogol. It is because of you alone that we Russians can proudly say that we have our national theatre. In all justice, it should be called the Ostrovsky theatre." This tribute to Aleksandr N. Ostrovsky was made by the writer Ivan A. Goncharov, seated at extreme left of this photo taken in the editorial offices of the magazine* Sovremennik. *Seated with him (left to right) are Ivan S. Turgenev, Aleksandr V. Druzhinin, and Ostrovsky. Standing behind them are Leo N. Tolstoy and Dimitri V. Grigorovich.

Photo I. Efimov © APN, Moscow

Scene from a production of* The Forest *at Moscow's Maly Theatre where this and other plays by Ostrovsky still have an honoured place in the repertoire.* The Forest, *written in 1871, describes the decline of the Russian aristocracy and the rise of a new class of merchants, who buy up the large estates at rock bottom prices and ruthlessly clear their forests.

Photo © APN, Moscow

With his general's uniform, narrow-minded outlook and generally decrepit appearance, Krutinsky, a character in Ostrovsky's comedy* Even a Wise Man Stumbles, *symbolizes the decadent institutions of the old Russia. Above, Krutinsky played in a 1910 production by the great actor and director Konstantin Stanislavsky.

▶ tuously of his plays that they "stank of sheepskin".

Nevertheless, under the pressure of public opinion, Ostrovsky was elected a Corresponding Member of the Academy of Sciences in 1863. Shortly before, on the new ceiling of St. Petersburg's Maryinsky theatre, his portrait had been added to those of the classics of Russian satire, Fonvizin, Griboyedov and Gogol.

"The existence of a national theatre is the sign that a nation has reached its majority," wrote Ostrovsky, "just like that of academies, universities and museums." In addition to his creative work as a dramatist, he gave many years of his life to other activities connected with the theatre. Moscow's "Little Theatre" (or "Maly") where he staged many of his plays, was dubbed "the Ostrovsky house". And only six months before his death he was appointed director of the repertory of Moscow's imperial theatres where in face of considerable obstruction he nevertheless succeeded in introducing reforms. His influence on the history of the theatre was in every respect enormous.

Ostrovsky's horizons broadened as the years went by and came to include other social classes as well as the merchants. In the 1870s he created a new type of character, the cold, ambitious *bourgeois,* the Russian equivalent of Balzac's Rastignac. Ostrovsky analyses certain forms of Russian behaviour and patterns of thought with such originality and authenticity that this "Russianness" slowed down the introduction of his work to other countries. In France, for example, the first performance of *Groza* (1859; *The Storm,* 1898) possibly his masterpiece, did not take place until 1889.

Around the middle of the nineteenth century the Russian novel of Tolstoy, Dostoyevsky and Turgenev conquered Western Europe, but Ostrovsky's plays remained unknown there because of the exceptional translation difficulties involved. In the East too, interest in his plays only began to appear much later. In adapted form, his work enjoyed a certain success in China in the 1920s, but did not achieve world fame until the 1960s and 1970s, when plays by Ostrovsky were performed in over forty theatres in Delhi, London, New York, Paris, Milan, Hamburg, Basle and elsewhere. Since then their author's literary reputation and stature have continued to grow.

In Ostrovsky's own country, the greatest directors of the twentieth century have been attracted to his work. Konstantin Stanislavsky staged *Snegurochka* ("The Snow Maiden", 1872) a poetic masterpiece made famous by Rimski-Korsakov's operatic adaptation of it, and "A Yearning Heart". Vladimir Nemirovich-Danchenko, author and drama teacher who founded the Moscow Art Theatre with Stanislavsky, staged *Na vsyakogo mudretsa dovolno prostoty* (1868; *Even a Wise Man Stumbles,* 1944), and the great Vsevolod Meyerhold presented *The Forest* and "A Profitable Post". Two other avant-garde directors, Aleksandr Taïrov and Yuri Zavadsky, staged respectively *Bese viny vinovatye* ("The Innocent Guilty") and *Bespridannitsa* (1879; "The Girl without a Dowry"). Musical adaptations and experimental versions have also been performed in the present decade.

Some of Ostrovsky's plays have also been adapted for the cinema and television. Among them are Yakov Protazanov's version of *The Poor Bride,* Vladimir Petrov's *The Storm,* and, more recently, Eldar Riazanov's *Gestoki romanse* ("The Cruel Romance"), which was a great success with the public.

All these productions have made known a new Ostrovsky who sings a hymn to love and fidelity.

A man of wide culture, Ostrovsky did much to bring to the Russian stage dramatists from other literatures. Among the works he translated into Russian are the *Asinaria* of Plautus, Terence's *Hecyra,* Shakespeare's *The Taming of the Shrew* and *Antony and Cleopatra,* Machiavelli's *The Mandrake,* and works by Seneca and Cervantes.

With Nikolai Rubinstein, director of the Moscow Conservatory, and the actor Piotr Sadovsky, Ostrovsky created in 1865 the "Artistic Circle"—the first society of artists in Russia—whose members included actors, writers, musicians and painters. Impressed by the teachings of the Russian physiologist and naturalist Ivan Sechenov, he worked out a theory of acting based on the idea of reciprocal conditioning between the actor and his environment.

In the last years of his life, Ostrovsky spent much of his time on his estate at Chtchelykovo, in the region of Kostroma,

Photo © APN, Moscow

The actress Alice Koonen as Katerina in a 1924 production of Ostrovsky's* The Storm *(1859). In this interpretation of the play as a "peasant tragedy" Katerina is the personification of pride and purity, ready to lay down her life for the right to be free.

which became for him what Boldino was for Pushkin, Yasnaya Polyana for Tolstoy, and Bougival for Turgenev.In this country retreat he wrote more than a dozen of his finest plays. And it was there, in June 1886, in his house built high on a hill in the midst of the countryside he loved, where even the storms seemed more beautiful than elsewhere, that Ostrovsky passed away. Borne by peasants on long pieces of drapery embroidered with traditional motifs, escorted by faithful friends, Ostrovsky's coffin was carried through the places from which he had drawn inspiration to the cemetery of Nikolo Berezhki.

Today the house at Chtchelykovo is an Ostrovsky Museum, a place of pilgrimage. Nothing—neither the setting nor the welcome—has changed. The visitor almost expects to see the master of the house appear in the clothes he loved to wear in the country—Russian shirt, wide trousers and high boots, short grey doublet and wide-brimmed hat—ready to sit down at his work table. ■

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Latin America in European painting

One continent seen through the 'I' of another

by Miguel Rojas Mix

"THE people are blue-skinned and have square heads." The Europeans were still disembarking in the New World when John of Hollywood, a cosmographer with the name of a film-star, penned this azure-tinted, geometrical portrait of its inhabitants. At the time when he wrote—or even earlier, with the publication of the letters of Christopher Columbus—an "imaginary America" began to take shape through images in which people and the natural world were continually transmogrified into the most unusual and fanciful forms.

Over the centuries, works of art depicting America were coloured by the spirit of the age in which they were created. The earliest of them encompass the entire continent, but from the eighteenth century onwards the United States has a separate image. After that date, we shall refer exclusively to Latin America.

The first image of America, coinciding with the classical aesthetic of the Renaissance, was a "fantastic" one. The "Discovery" (although to avoid Eurocentrism it would be preferable to talk of "the arrival of the Spaniards") does not seem to have made a great impression on Europe. Apart from travellers' tales and the engravings illustrating them, there are few contemporary accounts of the impact made by this event on the European continent. We are left with three major literary works: "Des cannibales", a chapter of Montaigne's *Essays;* Thomas More's *Utopia;* and Shakespeare's *The Tempest.*

There are also a handful of allusions and exotic details in paintings by the great artists: a name on a map by Leonardo da Vinci, a plump agave cactus in *The Garden of Earthly Delights* by Hiëronymus Bosch and a sunflower lurking somewhere among his sketches; a Saimiri squirrel monkey in *St. John on Patmos* by Hans Burgkmair the Elder; and a strange figure of Apollonian physique, clothed in feathers, used by Dürer to decorate the prayer-book of Maximilian I.

And yet newly-discovered America seemed to be tailored to fit European dreams. In the New World, all myths found concrete expression. The "newest of the new" walked hand in hand with the old. There, merging and overlapping, were to be found Eden, the country of Ophir and El Dorado. Columbus believed that he had discovered Paradise, and Dürer and Rubens followed current taste by placing between Adam and Eve a parrot—a bird which, though undeniably beautiful, seems to symbolize a sin of frivolity which has been imputed to America ever since.

Through the landscapes of the New World wandered creatures from the classical and medieval bestiaries: giants cohabited with basilisks, and Amazons, with one breast slashed off, encountered sternocephaloids, creatures with heads beneath their shoulders. In addition to these figures were plants and animals the evocation of which inspired artists to create a world where miracles could happen, unhampered by the mundane restrictions of daily life.

America was to exert an influence, even if indirect, on the emergence of a series of themes in European painting. Did the encounter with its pristine natural world contribute to the discovery of landscape painting as a genre? (Dürer was the first European artist to paint pure landscapes.) We cannot be sure. What is certain, however, is that in reawakening the classical opposition between "techne" (art and technique) and "physis" (nature), America raised once again the question of the origins of humanity and fostered in painters a certain taste for the primitive. And not only for biblical primitivism—many painters have worked on the theme of Paradise: Cranach, Jan Brueghel, Titian, etc.—but also for classical primitivism, Orphism and nostalgia for the Golden Age, which influenced the style of Piero di Cosimo's works.

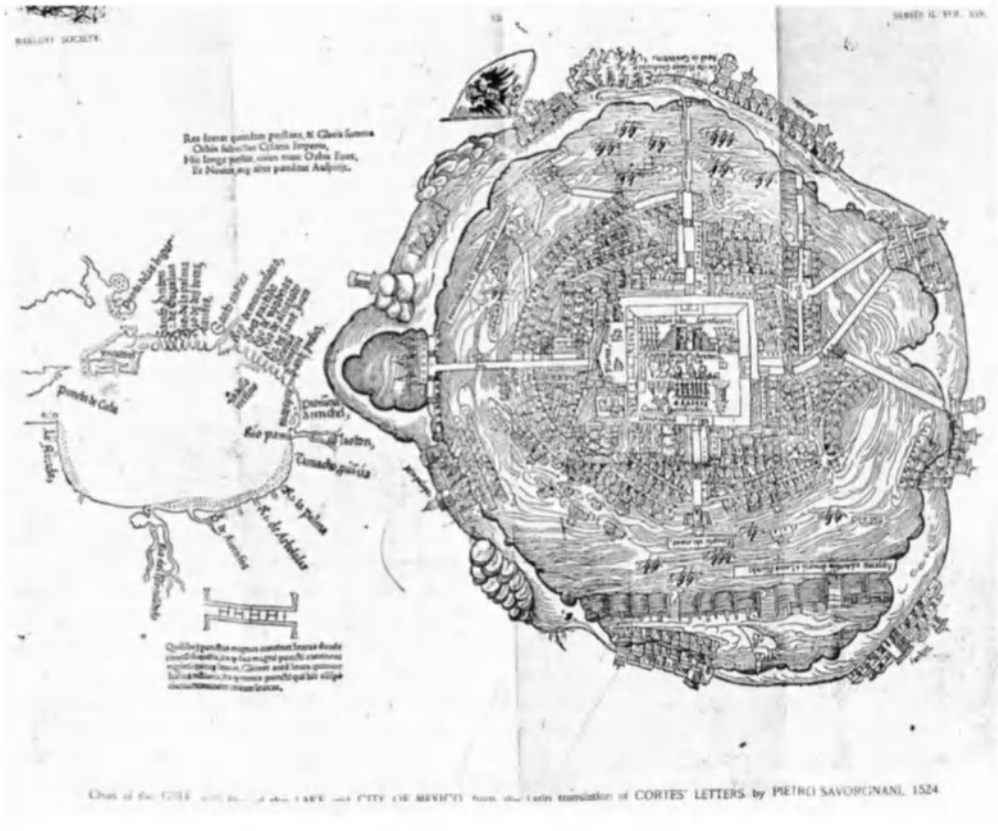
Nevertheless, there is little reference in European painting to the primitive lives of the inhabitants of America, for the simple reason that Europe never managed to decide whether they were barbarians or "noble savages". Were the indigenous people of America human beings or animals? Europeans wondered. Did they have souls? Should they be enslaved? Should they be exterminated? And although Bartolomé de las Casas maintained as long ago as the mid-sixteenth century that all the nations of the world consist of human beings, the Puritan colonizers had very different ideas. Even in the nineteenth century the poet James Russell Lowell had a Yankee soldier in the Mexican War confess that before he left home he was convinced that Mexicans were not human beings but a nation of orang-outangs that could be slaughtered without a second thought.

In 1637, John Maurice of Nassau, Gov- ▶

THEODORE GERICAULT (Rouen, 1791 - Paris, 1824). The Battle of Maipú, *gouache, around 1818. Paris, Bibliothèque Nationale. This little-known work by Géricault depicts the meeting between José de San Martín and Bernardo O'Higgins after their army had defeated the Spanish forces at Maipú (8 April 1818) and brought independence to Chile. Géricault, who painted his famous* Raft of the "Medusa" *in the following year, epitomizes the spirit of the Romantic painters who championed "modernity" and the new freedoms, and closely followed contemporary events in Spanish America and elsewhere.*

ALBRECHT DÜRER (Nuremberg, 1471 - id. 1528). This figure (below) drawn in the margin of the prayer-book of the Emperor Maximilian I (1515) is an example of the way in which the non-European was envisioned by early 16th-century Europe as radically different from the European, incorporating features from India, Africa and America.

Photos © M. Rojas Mix, Paris



THE MAP OF TEMIXTIAN (Mexico City), known as the "Cortés Map", incorporates a schematic map of the Gulf of Mexico (at left of document), and is the oldest known map of the island of Tenochtitlán, the site of present-day Mexico City. It is attributed to Hernan Cortés since it appears in the first Latin edition of the conquistador's second letter to Charles V, published in Nuremberg in 1524. This highly imaginative piece of work with its European-style city buildings may have been a source of inspiration for Utopian thought. (Its influence may be seen in a plan for a Utopian city dating from around the same time and attributed to Dürer.) The link between America and Utopia seems to have been close; in his book Utopia *(1516), Thomas More learns of the existence of Utopia from a certain Hitlodeo, who is presented as a former companion of the Italian navigator Amerigo Vespucci, from whom the American continent takes its name.*

ernor and Representative of the Dutch West India Company, took up residence in Pernambuco. In his entourage were Frans Post and Albert van der Eeckhout, two artists who had been instructed to paint everything that lived and moved and had its being there. While they were in Brazil, they produced works that were true to life. When they returned to Europe, however, buyers considered their paintings to be insufficiently exotic and decorative, and to comply with the taste of the age they were obliged to invent a Brazil of gaudy jungle scenes and improbable animals. Such was the "Baroque image" of America.

This new style loved exuberance and an exoticism that gave short shrift to geographical precision. America now became a set of decorative motifs and competed in the salons with "Chinoiseries". Some of the finest depictions of exotic America date from this period: the "tapestries of the Indies", large canvases into which are woven images of Indians, llamas, tapirs, etc.—in short, all the animals and plants with which America astonished the Old World—all jumbled together with animals and plants from Asia and Africa. For Baroque, the exotic has no geographical location, but is simply "outside Europe".

But America became fashionable for allegory as well as for decorative exoticism: she is one of the matrons representing the "Four Quarters of the Globe". These female figures were a favourite motif of the time, because on ceilings and at the heads of staircases they could give solid expression to the limitless power-hungry aspirations of Absolutism and the no less ambitious missionary pretensions of the Counter-Reformation. Giovanni Battista Tiepolo, the undisputed master of this art, produced the finest representation of America as an Amazon, with the horn of plenty in one hand and a skull at her feet. Rich and barbaric. Rich. and thus promising boundless wealth to kings; barbaric, and thus open to legitimate conquest. The country must be converted to Christianity and civilized: profit and its justification fused in a single image.

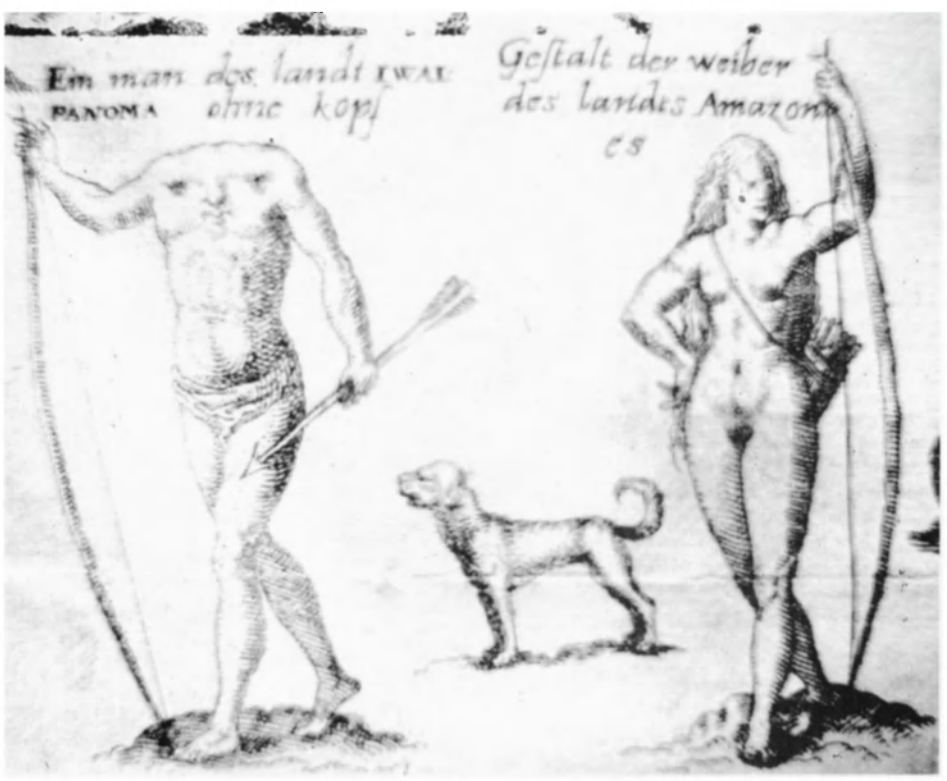
This image of America changed in the nineteenth century with the advent of Romanticism. The Romantics brought a spirit of liberalism, and their art expresses the values of a nascent middle class. Their themes included the new freedoms, revolution, the abolition of slavery, the people, progress, nature and travel. In America the Romantics found plenty of grist to their mill. A series of engravings by William Blake denounces slavery in Suriname; a watercolour by Géricault celebrates a decisive battle for the independence of Chile. But, above all, such concerns find expression in the taste for the picturesque to be found through travel and in the feeling of wonderment before the rich profusion of the natural world.

Romantic exoticism is nevertheless distinct from that of the Baroque period. It prides itself on being scientific and attempts to reproduce the landscapes, animals and people of the New World with total verisimilitude. It is the exoticism of exploration in the travels of Alexander von Humboldt, and the literary exoticism of Chateaubriand, who describes the Niagara Falls with a geographer's scrupulous attention to detail. Humboldt attempts to marry art and science in "treu und lebendig" (faithful and lively) representation of reality. This combination was to be of benefit to both: to art, since contact with such magnificence in nature would revitalize landscape painting, and to science, which was thus able to enrich its stock of images (photography was still unknown). The spirit of Humboldt imbues most of the German artists who travelled to America in the nineteenth century: Johann Moritz Rugendas, who journeyed throughout the continent; Ferdinand Bellermann, who visited Venezuela; Eduard Hildebrandt, to whom we owe one of the most vivid depictions of Brazil in the mid-nineteenth century; and many others, including Pissarro.

This great French painter, born in the West Indies, arrived in Venezuela under the name of Pizarro. He was twenty-two years old. His style was in keeping with the naturalism favoured by Humboldt, but even at this early date he was determined to capture the intensity of the light. Was this naturalism, bathed in the sunlight of the Caribbean, the first stage of the quest that would make him one of the founders of Impressionism? Whistler, another artist obsessed with light, would leave in one of his paintings a fleeting record of his brief contact with South America. At anchor one night in the world's remotest harbour, he painted *Valparaiso: Nocturne in Blue and Gold.*

Three outstanding painters of the end of the century had intermittent connections with America: Manet, who produced a number of versions of *The Execution of Maximilian*; Henri (Le Douanier) Rousseau, of whom it is claimed, on scanty evidence, that he was in Mexico with the French army and there discovered the "tropical" landscape that is unmistakably his own; and Gauguin, the great master of modern exoticism, which he portrays as a refuge from civilization. Gauguin was influenced by his childhood in Peru. Both in his pottery and in some of his paintings we find the shapes of Mochica vases: head-shaped jars which are self-portraits, and terra-cotta vases with the uplifted faces of Breton women, just as in Inca society, where there were no tables, the clay faces must have gazed upwards to meet the eyes of their owners and masters.

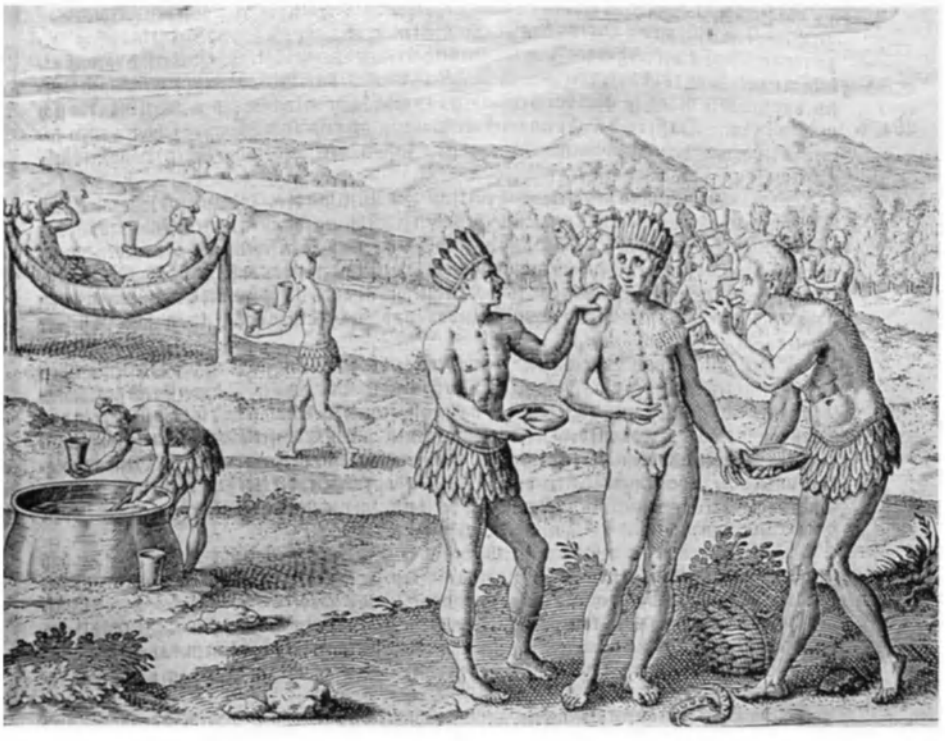
At the beginning of the twentieth century, the image of America becomes Janus-faced. One face is that of the mass media;



THEODORE DE BRY (Liège, 1528 - Frankfurt-am-Main, 1598). Engraver famed for his 13-part Travels in America published between 1590 and 1634. The Amazon and the sternocephalic figure were two of many fantastic creatures which European travellers and chroniclers claimed to have found in Brazil and Guyana, and show how European myths were projected onto America. The Amazon is a figure from classical mythology and the headless man appears in a legend associated with imaginary journeys. Headlessness is also a feature associated with such figures as Gog and Magog and AntiChrist. The monstrous creature here epitomizes the Indian's diabolical nature.

DE BRY, **El Dorado.** *The engraving below depicts the original myth of Eldorado ("the gilded one"), a name first applied to the chief of a rich country who according to legend plastered his naked body with gold dust before plunging into a sacred lake. Eldorado later came to mean a whole fabulous country of gold which was described in the 18th century by Voltaire : "Near to a certain Parima, whose sand was of gold. ... There was a city with gilded roofs. ..."*

WILLIAM BLAKE (London, 1757- id. 1827). Poet, painter and illustrator of Dante. Blake also expressed his humanist vision in his illustrations for John Gabriel Stedman's **Narrative of a Five Years' Expedition against the Revolted Negroes of Surinam** *(London, 1796). Blake shows in atrocious detail (right) how slaves were tortured to death. His work and that of painters who followed him anticipated the struggle for the abolition of slavery.*



Photos © M. Rojas Mix, Paris

HENRY MOORE (Castleford, 1898 - Much Hadham, 1986). Like many European artists, the great English sculptor drew inspiration from pre-Columbian art. The **Reclining Figure,** *below, outside the main building of Unesco Headquarters in Paris, and other works bearing the same title, have a strong affinity with effigies of the Aztec divinity Chac Mool. Opposite page below, statue of Chac Mool in the Temple of the Warriors, Chichén Itza, Yucatán, Mexico.*

Photo © All Rights Reserved

Photo © Roger-Viollet, Paris

PAUL GAUGUIN (Paris, 1848 - Atuona, Marquesas Islands, 1903). Above left,* Self-Portrait,** *stoneware, 1889, Copenhagen Museum of Decorative Arts. The same vessel features in a picture Gauguin painted in the same year,* **Still-life with Japanese Woodcut** *(Ittleson Collection, New York). Like Gauguin's other ceramics, this self-portrait is strongly inspired by pre-Columbian Peruvian pottery such as the anthropomorphic Mochica vase (above right). Gauguin may have sought self-realization in exoticism through memories of his childhood in Peru or because of the Peruvian blood he inherited from his maternal grandmother.

▶the other, that of art. The media have accumulated all the stereotypes that have represented America throughout history, together with new clichés born of specific historical events. The image of parrot-like frivolity, human degradation in hot climates, sloth and childishness has been compounded by that of *machismo,* corruption, the siesta and lust for revolution. Such is the image put across by the cinema, advertising and light novels, and often, too, by more serious literature. The comic strip is largely responsible for projecting this image, although it is true that comics are now beginning to change. The Indian is regarded with less contempt, and the Western hero has doubts about his moral superiority. This may be to some extent due to the influence of the French social anthropologist Claude Lévi-Strauss, who altered the concept of "the savage mind".

The image found in art is quite different. In the early twentieth century it sought renewal through the discovery of new rules of formal expression. When Picasso, Braque and Matisse drew on African aesthetics to creat modern art, all non-European art was seen with new respect as a source of inspiration for the avant-garde. Many artists became interested in pre-Columbian art. One was Henry Moore, whose *Reclining Figures* irresistibly evoke the statue of the Aztec divinity Chac Mool. The image of twentieth-century art thus came into being, not merely as a prolongation of Greek classicism—of the aesthetics of Phidias and Praxiteles—but also as the synthesis of the creative abilities of all humanity. Cubism, abstract art, expressionism and other schools of art owe much to the sensibility of these "foreign cultures".

Thus over the centuries America has been depicted in images which do not always correspond to reality but tend instead to reflect European interests and changes in Europe's idea of itself from one period to the next. In this context, the non-European is little more than a mirror. Europe has projected its own vision of itself—whether classical, Baroque or Romantic—onto "the other". As this vision changed, "the other" changed too. And so we see an America that is imaginary in two senses—both because its story is told in images and because it is more imaginary than real. As an Indian says to a European in an illustrated story by the Italian author Milo Manara: "Everyone knows that Indians cannot really exist in your world." ■

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Saintly sons and daughters

Ancient China's enduring cult of filial piety

by Donald Holzman

Drawings show the evolution of 3 Chinese characters from pictorial representation. Left to right, ideograms signifying "old", "child" and "filial piety". The latter is a combination of the first two.

Calligraphy © Hsuing Ping Ming, Paris. Drawings from *L'origine des caractères* © Yong Bao Zai, Beijing, 1979

THE desire to reach out beyond our everyday lives to find some kind of permanence or absolute meaning for them seems to be universal, but each civilization reaches out in a different way. To study one of the methods the Chinese have employed to attain to this heightened meaning of life may teach us something about the bases of Chinese civilization and also something about our own.

The Chinese have espoused various forms of religiosity throughout their long history. Filial piety is possibly the most enduring of all these forms. Archaeologists believe that the burial sites in Banshan, eastern Gansu, which date from the beginning of the third millennium BC, show that the Chinese already celebrated an ancestor cult at that time. Whether or not we accept their hypothesis, it is clear that filial piety was the cornerstone of the most ancient Chinese royal religion. The worship of the supreme deity, God on High (Shangdi) could only be carried out through the worship of the king's own ancestors who served as "go-betweens" (*pei*) to the deity.

Evidence of filial piety is also found throughout the earliest period of Chinese history, even though the character for filial piety, *xiao*, strangely enough, does not appear in the earliest writings, the oracle bone inscriptions. On bronze vessels dating from as early as 1000 BC, a Chinese scholar writing in 1974 counted sixty-four inscriptions containing the word for filial piety, in contexts showing that the sentiment concerned living members of the family (parents and brothers) as well as ancestors.

Illustration depicts an episode in the life of a model son, Xue Bao. "His father remarried and his new wife, taking an intense aversion to Xue Bao, had him sent away from the house. But he cried night and day, unable to leave, until they took a stick to him and he was obliged to lodge in a hut outside the house. In the mornings he would go in to sprinkle and sweep, which angered his father, who chased him out again."

Photo from an 18th century Korean work on virtuous people from Chinese history © Musée Guimet, Paris

It is hard to appreciate today what it meant to be "filial" in ancient China; too few texts dealing with everyday life have survived to enable us to reconstruct in detail what it was like to live in a Chinese family in, say, 1000 BC. However, some ancient texts do give us glimpses of what Chinese in that distant past thought of their parents, providing a picture not entirely different from that presented by Chinese family life today. Poem no. 202 in the "Minor Odes" of the "Book of Poetry" (*Shijing*), for example, contains a very moving description of an orphan lamenting the death of his parents, and the "Book of Documents" (*Shangshu*) contains a number of references to filial piety, the most important (and probably one of the oldest) being in the "Announcement to Kang" (*Kanggao*). The passage in question not only equates unfilial children with "the worst criminals", it also describes unfilial behaviour in emotive terms, saying that an unfilial son "wounds his father's heart grievously".

Yet in the earliest stories told about filial sons and daughters there is something that non-Chinese find hard to believe or understand. A story in a very late section of the "Book of Documents" about the early culture hero, Shun, and his barely credible filial conduct towards his blind father and his wicked stepmother, is typical of the stories of filial sons. In one of the very few works of Antiquity that tell us much about everyday life, the *Zuozhuan* ("Zuo's Commentary" on the *Chunqiu*), a work that is generally thought to have been recorded in written form in the mid fourth century BC but may contain genuine material from as early as the end of the eighth century, are other stories which it is equally difficult to believe.

It is surely not a coincidence that the very first story in the *Zuozhuan* concerns filial piety. It describes the actions taken by Duke Zhuang of the state of Zheng who has done everything in his power to remain filial to his mother whose treacherous behaviour towards him would seem rather to merit the strictest punishment. Yet the commentators, beginning with the author of the *Zuozhuan* himself, find that his behaviour was not filial enough! The stories of Jizi (695 BC) and of Shensheng (659 and 655 BC) both of whom prefer to die rather than to deny their fathers' exorbitant demands, are similarly hard to take. In all these stories filial piety seems to require absolute obedience to one's parents.

These earliest examples of the importance of filial piety are more than confirmed in the Golden Age of the philosophers. Every single school of philosophy without exception, even the iconoclastic Daoists and the anti-traditional Legalists, accepted filial piety as a natural, inevitable human sentiment. The Legalists, indeed, coupled the virtue with "loyalty" (*zhong*) and gave it an importance in the government of the State that it had never had previously but that it was to keep until our own day. ▶

Drawing of Cao E., a Chinese heroine celebrated for her filial devotion. Her father was a shaman who drowned while celebrating the cult of the God of the Waves. "His body was not recovered, and his 13-year-old daughter, Cao E., went along the river wailing and crying night and day without stopping. Seven days later she threw herself into the river and drowned."

Photo from an 18th century Korean work on virtuous people from Chinese history © Musée Guimet, Paris

▶ Confucius makes filial piety a cornerstone of his philosophy, but his remarks on the subject show that for him this quality transcends ordinary rationality and should be treated as something inviolable. It is generally agreed that Confucius, in his "Analects" or "Conversations", provided China, and the world, with some of the loftiest, most deeply human and appealing moral insights ever pronounced. But his dicta on filial piety seem so stiff and doctrinaire that they might almost have been made by someone else, a follower so intent on keeping the letter of Confucius' teaching that he lost its spirit.

But I am by no means sure that this is the case; is it not rather that the very special role played by filial piety in Chinese thought in general, and in Confucian thought in particular, gives to his pronouncements on the subject a stiff, absolutist tone quite absent from the rest of his work? Precisely because the Chinese have considered filial piety as something "absolute", something universally recognized as beyond question, a distinctive form of moral hero or saint has come into being. Detailed study of this "saint" may reveal something important about the Chinese way of thinking.

The three examples already cited from the *Zuozhuan* show men doing very strange things, leading to suicide for two of them, in order to respect blindly the sometimes irrational wills of their parents. Many similar sacrifices must have been made in the ancient period, but it is only under the Empire [after the unification of China in 221 BC] that stories of filial sons and daugh-

Scene from the life of St. Mary Magdalen de Pazzi (1566-1606), patron Saint of Florence who was canonized in 1669. In spite of a fragile constitution, she lived in great austerity and attained a high degree of mysticism. She is shown below at the age of eleven when, wearing a crown of thorns, she spent entire nights flagellating herself.

Photo © Carmelite convent of St. Mary Magdalen de Pazzi, Florence

ters become commonplace and are recorded in detail. A chapter is reserved for them in twenty of the twenty-four dynastic histories and countless separate collections are devoted to them, much like the "Lives of the Saints" that were so popular in Europe almost until modern times. It may be that filial piety only became noteworthy under the Empire when it was institutionalized as an "imperial" virtue, rewarded by the State with stipends and titles that could lead to high official posts in the civil service.

The earliest examples of filial extravagances I have been able to find in the dynastic histories are taken from the *Hou Hanshu,* principally from Chapter 39, which is entirely devoted to filial sons and daughters and probably dates from the middle of the fourth century AD.

The Preface to Chapter 39 tells two stories about sons who showed filial piety. The first describes a man who serves as an official only to be able to take care of his mother, who has no personal interest in the glory such service might procure for him. The second tells a story that is so typical that I shall quote the beginning of it in full:

"At the time of Emperor An [who reigned from AD 107 to 126] there lived a man from Runan [southern Henan] named Xue Bao. ... Studious and sincere, when his mother died he was renowned for his perfect filial piety during the mourning period. His father remarried and his new wife, taking an intense aversion to Xue Bao, had him sent away from the house. But he cried night and day, unable to leave, until they took a stick to him and he was obliged to lodge in a hut outside the house. Mornings he would go in to sprinkle and sweep, which angered his father, who chased him out again. Then he set himself up in a hut next to the gate of their ward, but never failed to greet his parents in the evening and in the morning. After a year or so his parents felt ashamed and had him come back."

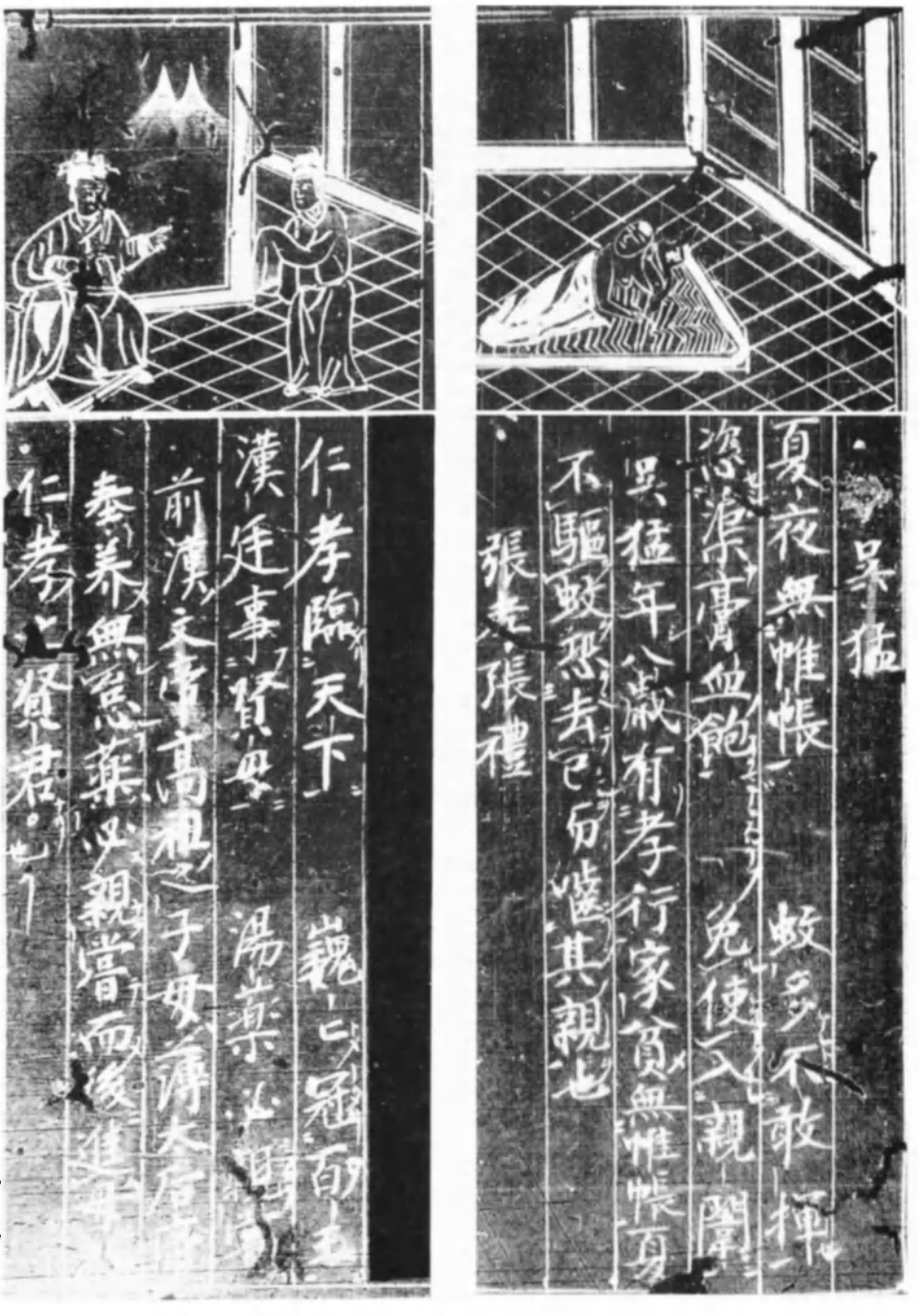
Later, when his father and stepmother died, he doubled or tripled the mourning period. Xue Bao is typical of the filial sons we read about in texts of this time. In fact his actions seem almost normal when you compare them with some of the other filial sons and daughters that fill the pages of the *Hou Hanshu.*

We learn of four-year-old children who refused to eat and drink when their parents fell ill, and of a man who "ate no meat and drank no wine for over ten years after the death of his father, and commemorated the anniversary of his death by fasting for three days". Some of the stories, such as that of Yang Zhen (died AD 124), are even more amazing. A scion of one of the founding families of the Han dynasty, Yang Zhen taught school early in life to keep aloof from politics:

"Fatherless when young and poor, he lived alone with his mother. He rented some land to cultivate and thus provide for their sustenance. Once one of his pupils tried to help him plant cabbages, but Yang Zhen pulled them up each time, and replanted them a little further on. The neighbours called him 'filial'."

Yang Zhen, believe it or not, is here proving his filial piety by insisting that his mother's cabbages were planted by her son's own fingers!

Moving cabbage plants around is a harmless enough demonstration of filial feelings, but there are many examples of deaths caused by a desire to give irrefutable proof of filial piety. The most famous example is the story of Cao E, who lived near what is now Shaoxing in Zhejiang. Her father was a shaman (*wu*) who drowned on the fifth day of the fifth lunar month (6 June) in AD 143, while he was celebrating the cult of the God of the Waves (perhaps a deification of the ▶



Two edifying cases of filial piety are described in a 14th-century collection of Chinese poems by Gui Ju Jing entitled* Twenty-four Examples of Chinese Piety.** ***Drawing this page, left shows the Emperor Wu of the Han dynasty (standing) and his mother (seated at left). After becoming Emperor, Wu continued to treat his mother with the same filial devotion as before. Whenever she took a medicinal potion the Emperor tasted it himself before giving it to her. Drawing right evokes the story of another model son. The family of 8-year-old Wu Weng lived in a region infested with mosquitoes. Because his parents were so poor that they could not afford to buy a mosquito net, Wu Weng slept in their bedroom and let himself be bitten by the mosquitoes so that his parents could sleep undisturbed.

Photos © All Rights Reserved

▶ tidal bore). "His body was not recovered, and his thirteen-year-old daughter, Cao E, went along the river wailing and crying night and day without stopping. Seven days later she threw herself into the river and drowned."

Another filial daughter, Shuxian Xiong (or Shu Xianluo), drowned herself in Sichuan, on the other side of China, on the spot where her father had drowned, and was found floating in the water with her father in her arms six days later. Jiang Shi drowned because he ventured too far out into the river to fetch drinking water for his mother who preferred river water to well water.

The stories showing self-sacrifice, miracles, cruel persecutions (usually by mothers-in-law or stepmothers) greeted with forbearance, useless suicides, extraordinary examples of brothers who refuse to leave one another even to sleep with their wives, except to produce offspring, fill the pages of the *Hou Hanshu* and are in fact found throughout Chinese history.

How can these astonishing actions be accounted for? They are strongly reminiscent of the behaviour of the Christian saints of late Antiquity and the Middle Ages. Mortifications, leper-licking, holy anorexia and other excessive actions were never deemed excessive enough to prove the saints' love for and adoration of their Creator. Is this not a similar phenomenon to that of Chinese filial piety?

The Chinese world-view, as has often been remarked, is much more earthbound than the world-view of the West; immanence has always been preferred to transcendence in China, and when the Chinese reach out towards their "creator" they refuse to take the metaphysical leap the Westerner finds normal and look toward those they know are their true creators, their parents. "The Book of Filial Piety" (*Xiaojing*), a mediocre document that probably dates from the very end of Antiquity or from the beginning of the Imperial era and has been extraordinarily popular throughout Chinese history, says this in almost so many words. In Chapter 9 we read: "there can be no greater veneration of the father than to make him the go-between with Heaven." The word used for "go-between", *pei*, and the context, show that the authors of the *Xiaojing* here are referring to the very earliest Chinese religious practices known to us, according to which sacrifices were presented to royal ancestors who, as go-betweens, interceded and presented to Heaven their descendants' requests. This is to give the father a mystical role and to identify him, if not as God, at least as a stepping-stone toward God. Thus in this respect the Chinese are not far from making gods of their parents, and their actions show them, like their Western counterparts, attempting to reach out beyond themselves to glorify their creators, who are literally their fathers and mothers. ■

DONALD HOLZMAN, *born in Chicago, USA, is head of the Institute of Advanced Chinese Studies in Paris, and director of studies at the School of Advanced Studies in Social Sciences, also in Paris, where he is professor of Institutions of Imperial China.*

How Japan reckons with

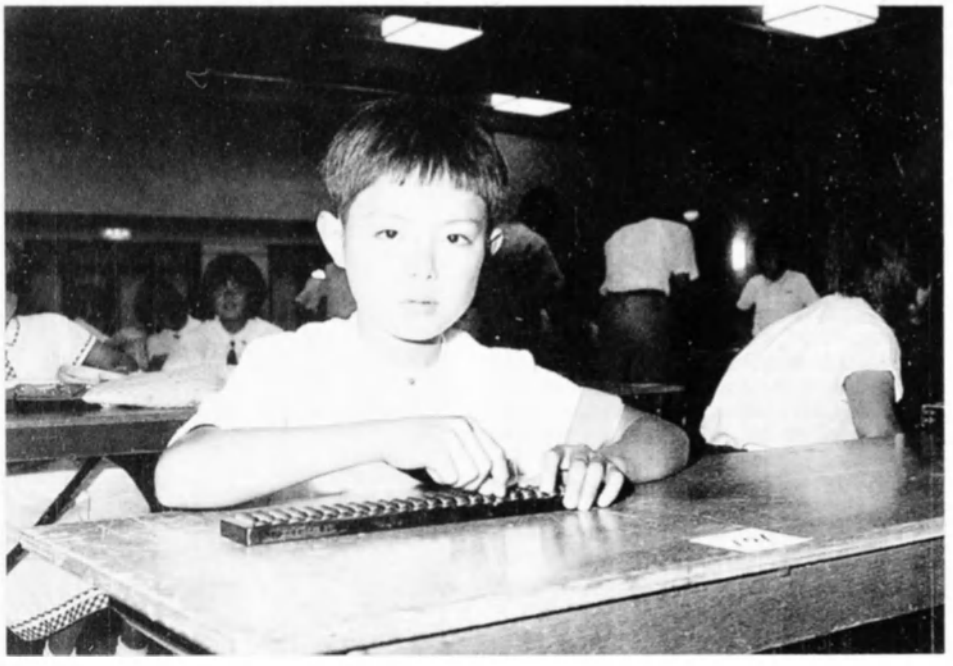
SURPRISING though it may seem in a country where many business enterprises are computerized and where microcomputers are widely used in schools and families, the *soroban* or Japanese abacus is still playing a unique role in Japanese life as a calculating device and as an educational tool.

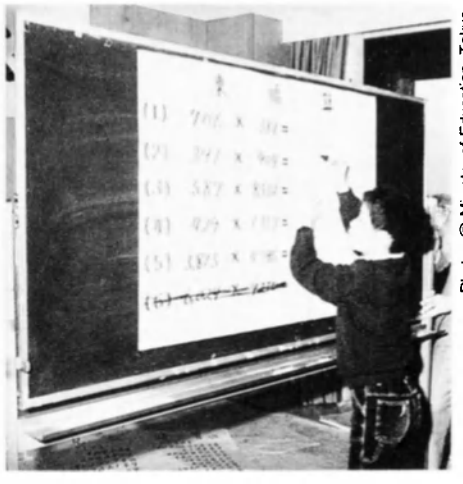
The *soroban* was introduced into Japan from China about 450 years ago. The Japanese then developed and began to manufacture an improved version which was soon being used throughout the country. Children were taught to handle the *soroban* in small schools known as *tera-ko-ya* and it is no exaggeration to say that the three R's in Japan became "Reading, Writing and *soroban*".

Why, at a time when the price of computers is falling and their performance is improving, should the *soroban* not only survive but form part of training programmes organized by some Japanese firms, with one world-famous computer manufacturer even holding an annual *soroban* contest for its employees?

There are several answers to this question. Firstly, a skilful handler of the *soroban* is likely to be a dab hand at immediately spotting errors in facts and figures, and able to use mental arithmetic to make the kind of instant estimates that are invaluable in business analysis and decision-making. Another plus for the *soroban* is that using it helps to develop the kind of psychomotor skills required for handling keyboard machines.

Today the use of the *soroban* is taught in





Photos © Ministry of Education, Tokyo

Using the* soroban *or Japanese abacus, this 11-year-old schoolboy can solve within ten minutes twenty addition and subtraction problems involving 5- to 10-figure numbers, and perform mental arithmetic calculations on 12- to 13-figure numbers.

At the blackboard, a primary schoolboy solving multiplication problems by mental arithmetic.

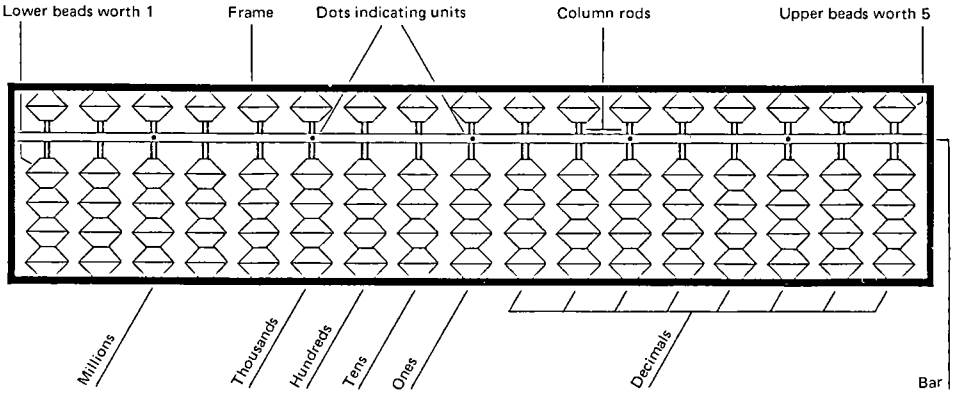
the abacus

by Toshio Sawada

Japanese primary schools, from the third year on, and occupies a major part of the curriculum in higher commercial secondary schools. A number of features make the *soroban* a useful educational tool. By manipulating beads pupils can actually see the process of calculation, become familiar with numbers and enjoy learning to be numerate. It also helps them to understand decimal notation. Another advantage, since higher figures are handled first (see drawings) is that it is easy to see approximate figures and also, incidentally, to calculate not only written but dictated numbers.

Research has shown that handling the *soroban* develops certain kinds of mathematical skills. Japan won first prize at a World Congress of Mathematics held a few years ago. Might further investigation show that this victory was in some measure due to the continuing role of the *soroban*? ■

TOSHIO SAWADA, *Japanese educator, is a senior specialist for curriculum in the Vocational Education Division of the Elementary and Secondary Education Bureau at the Ministry of Education, Japan.*



The* soroban *is a calculating instrument consisting of a rectangular frame containing a number of counting beads which slide back and forth along rods. A crosswise bar divides the* soroban *into two parts: the upper part consists of a row of beads each with a value of 5 and the lower part has four rows of beads each with a value of 1. On the crosswise bar, a dot is marked at every third rod to indicate the unit or the decimal point. The rows of beads to the left have a higher value than those to the right, and calculations with numbers of more than two figures are always done from left to right. The value of the beads is determined by their position: they only "count" when they are pushed towards the crosswise bar.

***Two examples of simple arithmetic on the* soroban:**

A. Addition: 87+52 = 139

(1) Put down 87.

(2) Add 50 (from the 52) to 80 (of 87) by moving the bead worth 5 away from the bar and positioning a bead worth 1 on the rod to the left. The number shown on the* soroban *is 137.

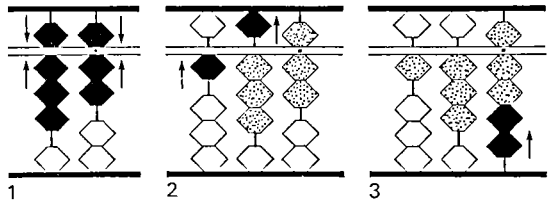
(3) Add 2 to the 7 of the last rod. The answer is 139.

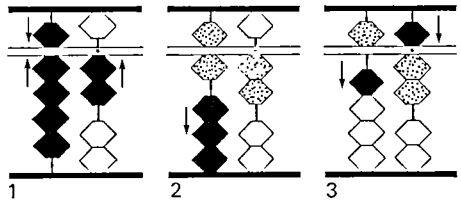
B. Subtraction: 92-35 = 57

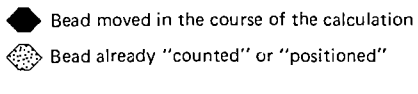
(1) Put down 92.

(2) Take away 30 (from the 35) from 90 (of 92), leaving 62.

(3) 5 cannot be subtracted from 2. Therefore borrow 10 from the rod to the left, which is worth 60. 10-5 = 5. Take away 10 from 60 and add 5 to the rod on the right, which is already worth 2. The answer is 57.







Drawings © Tomoe Soroban Co., Japan

An international symposium on the theme "Science and the Boundaries of Knowledge: the Prologue of our Cultural Past" was held in Venice, Italy, from 3 to 7 March 1986. Leading scientists from 16 countries attended the meeting, which was organized by Unesco in collaboration with the Giorgio Cini Foundation. They agreed on a final communiqué, the "Venice Declaration", which sets forth their joint observations in five points, summarized below:

1. A significant gap exists between the new world-view which is emerging from the study of natural systems and the values that continue to prevail in philosophy, in the human and social sciences and in the life of modern society. We believe that this discrepancy holds a threat to the very survival of our species.

2. The new and mutually enriching exchange between science and the different world traditions opens the door to a new vision of humanity, even to a new rationalism, which could lead to a new metaphysical perspective.

3. There is a pressing need for truly transdisciplinary research, through a dynamic exchange between the natural sciences, the social sciences, art and tradition. In a sense, this transdisciplinary approach is inherent in our brain through the dynamic interaction of its two hemispheres.

4. The conventional way of teaching science masks the divorce between today's science and outdated world-views. There is an urgent need for new educational methods that take into account current scientific progress, coming into harmony with the great cultural traditions, the preservation and study of which appear essential.

5. Although scientists may have no control over the applications of their own discoveries, they must not remain passive when confronted with the haphazard use of these discoveries. The magnitude of today's challenges requires a reliable and steady flow of information to the public and the establishment of multi- and transdisciplinary mechanisms for the guidance and even the implementation of decision-making.

The following two articles have been extracted from papers prepared for the symposium and illustrate some of the points made in the Venice Declaration.

Breakthroughs in brain research

by David Ottoson

IN the last two decades there has been a dramatic development in brain research, only rivalled by the advances in molecular biology in the early 1950s and the progress in physics at the beginning of this century. The introduction of new biophysical and biochemical techniques has made it possible to tackle problems that until recently were beyond experimental investigation. All evidence indicates that these techniques will open up a world hitherto unknown to us and give us new insight into the complexity of the higher functions of the brain. This development is at present progressing at a rapid rate, but the results already obtained have provided us with unprecedented data on many aspects of the brain involving information processing, perception, brain control of pain, neuro-transmitter actions, brain plasticity, regeneration, learning, memory, behaviour and emotion.

The major breakthrough in our understanding of the higher functions of the brain was the discovery of Roger Sperry, Professor of Psychology at the California Institute of Technology, of the functional specialization of the two hemispheres of the brain. Since the two hemispheres are anatomically almost identical, it had long been generally assumed that in principle the two brain halves had similar functions. However, it is interesting to note that as early as 1861 it was demonstrated by a French neurologist, Pierre-Paul Broca, that the centre for speech is localized in the left hemisphere. When presenting his observations to the Société d'Anthropologie in Paris, he made the now famous dictum: "Nous parlons avec l'hemisphère gauche".

Later observations, particularly on soldiers wounded in the two world wars, indicated that the two hemispheres have different functions also in other aspects, but the functional differences between them remained largely unknown until the early 1950s when Roger Sperry made his pioneering discoveries which soon received world-wide attention and for which in 1981 he was awarded the Nobel Prize in Physiology or Medicine.

Sperry's research thus established that each of the two hemispheres are specialized, each having its own specific functional characteristics. The left hemisphere is analytical, sequential and rational while the right is synthetic, holistic and intuitive. The left hemisphere is, to quote Sperry, "the more aggressive, executive, leading hemisphere with control of the motor system". This is the hemisphere that we mainly see in action and the one with which we communicate. The right hemisphere is "the silent passenger who leaves the driving of behaviour to the left hemisphere". The right hemisphere cannot express itself in language, is therefore unable to communicate any experience of perception or consciousness.

More recently a number of new methods have been employed for the study of brain functions which have given us new and exciting insights into the performance of the brain in health and disease. One of these techniques provides for measurements of the regional blood flow in the brain. With this technique it has been demonstrated that at rest in a quiet room, the cerebral flow is the same in the two hemispheres. It is interesting to note that the highest flow is found in the frontal lobe. Simple visual perception consisting of opening the eyes results in an increase in the primary visual area of the cortex, while visual stimuli which require discrimination tasks are followed by an increase in other areas. ▶

Photo © SPADEM, 1986, private collection

Tête nucléaire d'un ange *(1952), by Salvador Dali.*

Cerebral blood flow measurements have also provided interesting information on regional activation of the brain during voluntary movements in man. When programming a sequence of movements without actually executing them, there is a selective increase in a special area called the supplementary motor area. During the execution of a movement there is in addition an increase in another area, the so-called primary motor area. This suggests that the command for the movement is executed by the supplementary motor area, while the execution of the movement is carried out by the primary motor area.

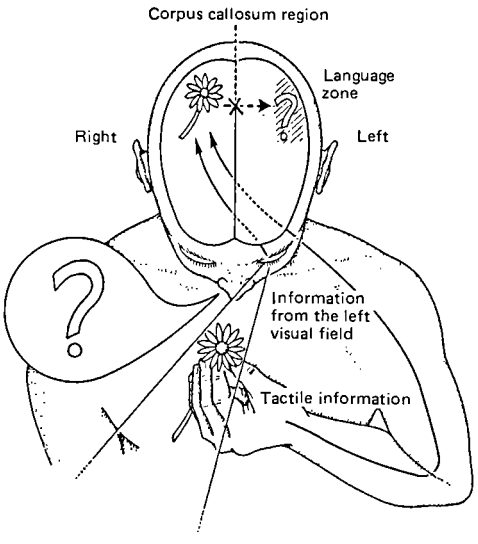
Equally interesting are the results of studies of cerebral blood flow during the focusing of attention. It is of particular interest from a clinical point of view that cerebral blood flow measurements have demonstrated abnormal patterns of blood flow in mental diseases such as organic dementia and schizophrenia. These findings encourage the belief that this method and other modern approaches to the analysis of higher brain functions may also provide a deeper understanding of the brain mechanisms in mental disorders.

Still another method, positron emission tomography (PET), provides a new and powerful tool for the study of higher brain functions. In positron emission tomography a chemical compound is labelled with radioactive isotope that decays by emitting positrons with the emission of gamma rays as a result. The gamma rays are recorded by a circular array of detectors placed around the head and a computer reconstructs the distribution of radioactivity and displays it as a colour-coded image on a TV screen. With this technique it is possible to see how different regions of the brain are activated during various kinds of mental activities. Thus it has been demonstrated that certain regions of the left hemisphere are activated when a person listens to someone speaking to him. When listening to music, regions in the right hemisphere become active. However, if the patient is asked to tell what particular piece of music is played or to say the name of the composer, the activity shifts over to the left (analytical) hemisphere.

The famous Russian physiologist Pavlov is supposed to have said that mankind can be divided into artists and thinkers. It would be tempting, in view of the new knowledge that recent advances in brain research have brought us, to believe that in artists the right holistic hemisphere is the dominating one while in thinkers the left analytical hemisphere is dominant. However, it is important to emphasize that the hemispheric differences are quantitative rather than qualitative in many aspects and that care should be taken in classifying individuals or groups as being dominated by the left or the right hemisphere.

It is equally clear that the brain only reaches its full potential capacity by the functional co-operation of the two hemispheres. This new insight has important implications for the understanding of higher cognitive functions and has practical applications in many fields of social life and most particularly in education. Recent developments in various areas of brain research provide strong evidence that in teaching attention should be given to the specific functions of the two hemispheres and both of them should be given the opportunities to fully develop their inherent faculties.

Most educational systems in the Western world have until now been directed mainly towards the training of the left hemispheric capacities. In view of our expanding knowledge of hemispheric processing it is important that the information provided by brain research should be integrated into the educational system. As our knowledge of the functions of the brain develops, teaching methods should be modified to meet the specific needs not only of the normal individual but also of those with hemispheric dysfunctions in order that they may be given the opportunities to develop the full functional capacities of their brains. ■



Drawing from *Le cerveau et l'esprit* by Guy Lazorthes © Flammarion, 1982

The study of the functions of the left and right cerebral hemispheres has made great progress due to the "split brain" technique, which consists in cutting the nerve fibres (primarily the corpus callosum) which interconnect the two hemispheres. In the early 1960s, this surgical technique was applied to several patients suffering from severe epilepsy by a team of specialists led by the U.S. neurophysiologist Dr. Roger W. Sperry (Nobel Prize for Physiology or Medicine, 1981) and led to a series of remarkable observations of the functioning of each hemisphere separately. It proved possible, in particular, to locate linguistic capacities essentially in the left brain hemisphere and to establish that the right hemisphere has superior abilities in the field of vision and the recognition of shapes. Thus, in the drawing above, the "right hemisphere" person (someone whose left hemisphere is inoperative) sees the flower, makes the gesture of smelling it, but cannot say its name.

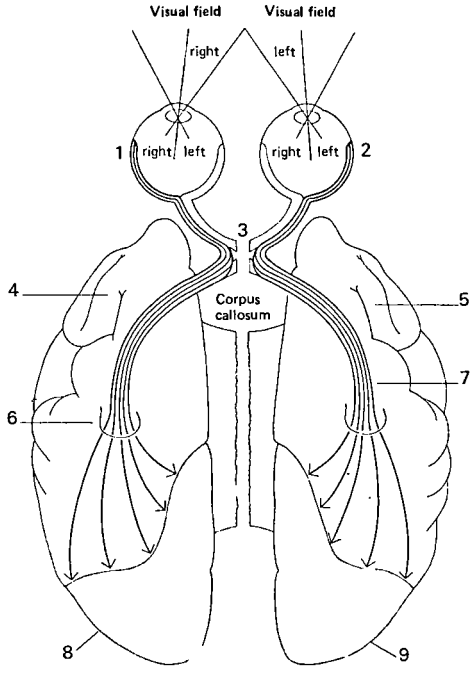


Diagram © *The Scientific American*, January 1964

Diagram above shows how visual fields and visual centres of the brain are related. Cutting optic chiasm and corpus callosum leaves each eye feeding information to one side of the brain only and eliminates the normal overlap of visual fields. 1. left eye-ball; 2. right eyeball; 3. optic chiasm; 4. left hemisphere; 5. right hemisphere; 6. lateral geniculate body; 7. optic tract; 8. right-half visual field; 9. left-half visual field.

DAVID GUSTAV OTTOSON, *Swedish medical doctor, has been since 1984 Special Adviser on scientific questions to the Director-General of Unesco. Former head of the department of physiology at the Karolinska Institute, Stockholm, president of the Nobel Committee for Physiology or Medicine, and honorary professor at the Beijing Medical University, China, he is a member of the Royal Swedish Academy of Sciences and of several international medical associations, including the International Brain Research Organization (IBRO) of which he is Secretary-General.*

Science and tradition

'Two spokes of a single wheel'

by Basarab Nicolescu

Photo Jean Mazenod © Mazenod publishers, Paris/National Museum, Athens

ANY practising scientist knows from experience that our representation of the world is not wholly arbitrary. A scientific theoretical construction worthy of the name may be rejected because it does not fit the observed facts. There is something that resists. What other name than "reality" can we give to that something?

To date, two conceptions of "reality" have dominated our representations of the world. "Reality" has been seen either as "objective" (with humanity cast in the role of "master" of an external reality) or as "subjective", created by humanity (humanity thus being the only source of "reality"). These two conceptions of reality stem, in my opinion, from a single vainglorious attitude—that of viewing humanity as the static and absolute centre of "reality". There is, however, a third possibility which seems to me to be consistent with modern scientific knowledge: "reality" is the product of the interaction between the world and humanity, which are two aspects of one and the same reality. Modern scientists could testify about this interaction.

The time may be ripe for us to incorporate the most general ideas of modern science into our culture. Is it going too far to suppose that the discrepancy between an outmoded vision of the world and an infinitely more subtle and more complex reality (as revealed on the quantum scale or on the cosmological scale) is the source of many of the tensions and conflicts that we witness every day, but on which we are virtually powerless to act? Is it not our attitude to reality that will determine, in the final analysis, the fate of our world? Is ignorance of fundamental science not one of the causes of that anarchic technological proliferation which, although it has many beneficial effects, may also lead our species to self-destruction?

Fundamental science is rooted in the nourishing earth of questions that are common to every field of human knowledge: What is the meaning of life? What is man's role in the cosmic process? What is nature's place in knowledge? Fundamental science thus has the same roots as religion, art or mythology.

It is true that such questions have gradually ▶

Finely sculpted figure on the marble tombstone of a Greek (4th century BC) evokes eternal questions of the meaning of life and man's role in cosmic processes.

and increasingly come to be regarded as non-scientific and have been cast into the outer darkness of the irrational, the preserve of the poet, the mystic, the artist or the philosopher. The cause is probably the indisputable triumph—at the material level—of analytical, reductionist and mechanistic thought. Everything was, apparently, determined, even predetermined. In this universe of false freedom it was amazing that anything could actually happen. As witnesses to an absolute, static and immutable order, scientists could no longer be, as in the past, "natural philosophers"; they were obliged to become "technicians of the quantitative".

Modern science, starting with the advent of quantum physics at the turn of the twentieth century, reveals the fragility of such a paradigm. Quantum physics has demonstrated the groundlessness of blind faith in continuity, local causality and mechanistic determinism. Discontinuity came in through the front door—that of scientific experiment. Local causality gave way to a subtler concept of "global" causality. "Objects" were replaced by relationships, interactions and interconnections among natural phenomena. Lastly, the classical concept of matter was replaced by the infinitely more subtle concept of matter-energy. The omnipotence of substance, the touchstone of reductionists from time immemorial, was challenged: substance is simply one of the possible facets of energy.

An unprecedented conceptual revolution which logically should have led to a new system of values governing our everyday life in the community began with Planck and Einstein. However, three-quarters of a century after the emergence of the quantum image of the world, nothing has really changed. We continue to act, consciously or otherwise, according to the concepts of earlier centuries.

The palpable, experimental discovery of a scale invisible to the sense organs, the quantum scale on which the laws are completely different from those of the visible scale of everyday life, has probably been modern science's most important contribution to human knowledge. The new concept which has thus emerged—that of levels of materiality—is one of those that could underpin a new vision of the world.

The world of quantum events is completely different from the world to which we are accustomed.

The unity of opposites seems to reign in this new world: quantum entities are particles and waves at the same time. The quantum event is not separable as an object: the new world is that of universal interconnection, relationship and interaction. Discontinuity and continuity coexist harmoniously (that is to say, "contradictorily"): energy varies by jumps, but our visible world nonetheless remains a world of continuity. The void is "full"—it contains, potentially, all events. The new world is one of perpetual effervescence, annihilation and creation, and movement at lightning speeds beyond comparison with those of rockets. Energy concentrated on the scale of the infinitely small reaches fantastic values that are hardly imaginable on our own scale.

But over and above the inadequacy of images there is also the inadequacy of logic and language based on classical realism. Contradiction, a concept that must be taken here in its philosophical sense of reciprocal construction through antagonistic struggle, does not mean incoherence. It simply means that what is unified at one level of reality appears contradictory at another level of reality.

Let us consider in this context the well-known example of the concept of complementarity introduced by Niels Bohr in 1927: a quantum particle may be described approximately in terms of either a classic particle or a classic wave, but the quantum particle is neither a particle nor a wave. Particle and wave appear to be two complementary aspects of the quantum particle,

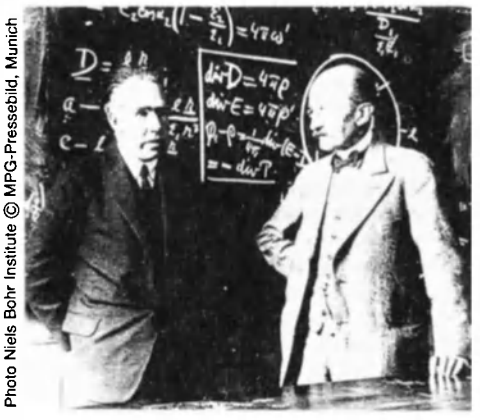


Photo Niels Bohr Institute © MPG-Pressebild, Munich

Physicists Max Planck (right, 1858-1947) and Niels Bohr (1885-1962) were respectively pioneers in the development of the quantum theory and quantum mechanics in the early 20th century. The quantum theory grew up around Planck's introduction into physics of the concept of the discontinuity of energy. According to this concept light, which appears to be a steady stream or a continuous flow, is actually given off and absorbed in tiny units called quanta. ***The theory was developed by Bohr and other great physicists into a system of "quantum mechanics" which has come to be used to describe physical phenomena occurring on such a small scale that the system of mechanics deriving from the work of the 17th-century English physicist Isaac Newton breaks down.***

Photo © Musée de l'Homme, Paris

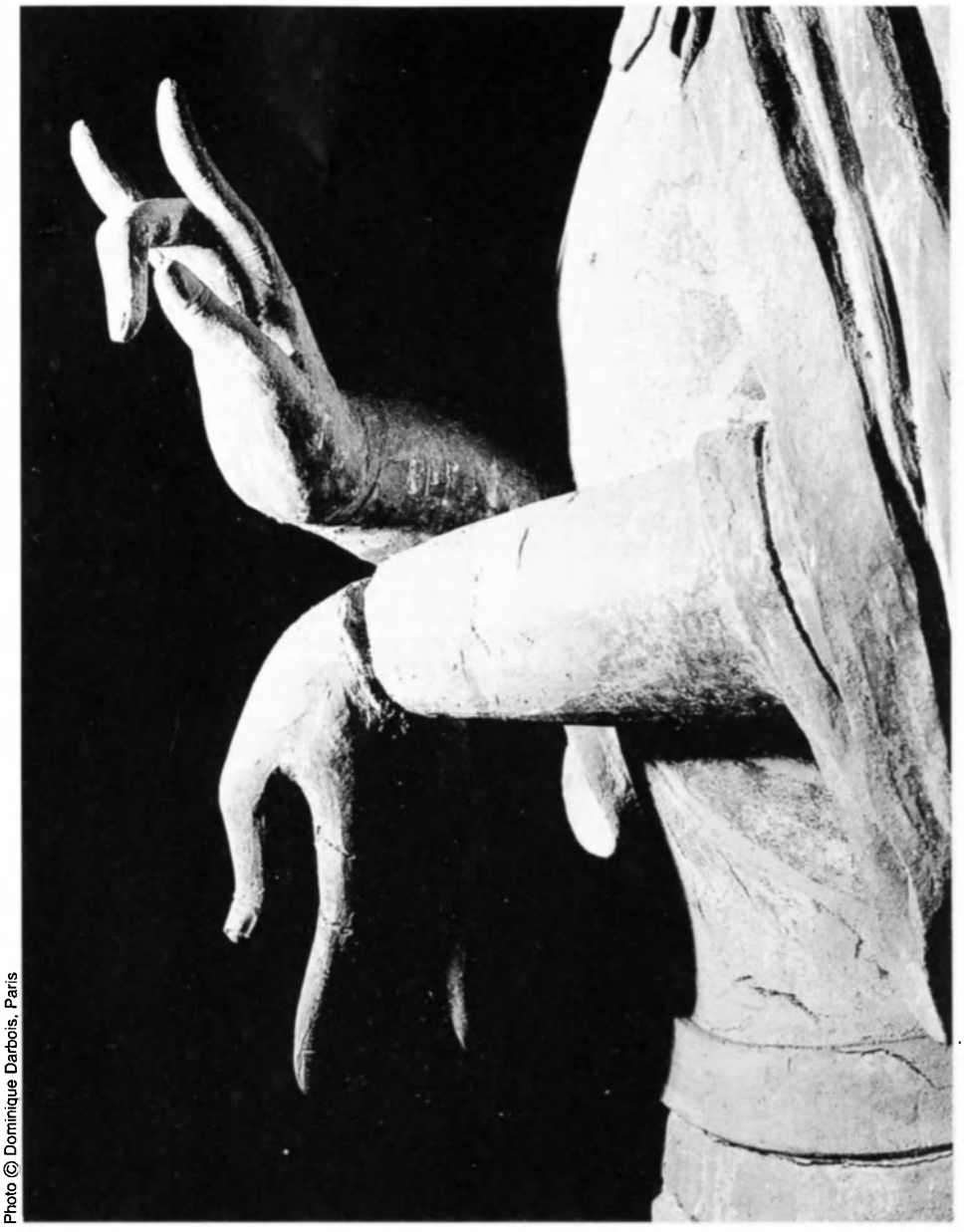


Photo © Dominique Darbois, Paris

The Buddhist tradition, like that of other great world religions, enshrines doctrines handed down over the centuries "by word of mouth, ... through the science of symbols, through writings or works of art, myths or rites." Above, graceful hands of a moulded clay Bodhisattva or future Buddha, in the rock-cut caves of Mai-chi-shan, a major Buddhist site in Kansu Province, northern China.

Shamanism is the traditional religion of the Tungus people of Soviet eastern Siberia. The central figure is the clan shaman, left, who is a mystical priest, singer, prophet and healer. Found in many parts of the world but especially in the Arctic and central Asia, shamanism is based on the belief that the world is pervaded by good and evil spirits whom the shaman seeks to influence or control by communicating directly with them.

which is, in this sense, both a particle and a wave.

Complementarity in this sense, then, in contrast to the meaning of the word in everyday language, denotes the mutually exclusive aspects of quantum phenomena.

The quantum particle defies representation by forms in space and in time, for it is obviously impossible to make a mental representation (other than by mathematical equations) of something which is at the same time both particle and wave.

This was an unprecedented challenge hurled by scientific experiment at the very foundations of our everyday thinking. For example, light behaves experimentally either as waves or as particles. But the results of scientific experiments are obtained, by definition, on our own scale in an unavoidably classical world that is incapable of conceiving of the unity of opposites. This separation between opposites is due to our logic, our language, and our way of interpreting results on an infinitely more complex scale than the quantum scale. On the quantum scale light is one: it is both wave and particle.

Is there really a connection between science and Tradition? Tradition means all the doctrines and religious or moral practices handed down over the centuries, originally by word of mouth or example, and the handing down of more or less legendary information about the past, also initially by word of mouth, from one generation to another. According to this definition, Tradition encompasses various "traditions"—Christian, Jewish, Islamic, Buddhist, Sūfi and so on.

Tradition is thus primarily concerned with the transmission of a body of knowledge about the spiritual evolution of man, his position in different "worlds", and his relationship with different "universes". This body of knowledge is necessarily constant, stable and permanent, despite the many forms through which it is transmitted and despite the distortions wrought by time and history. Transmission is usually by word of mouth, but it may also be effected through the science of symbols, through writings or works of art, myths or rites.

For an impartial researcher, there seems to be every reason to separate science from Tradition.

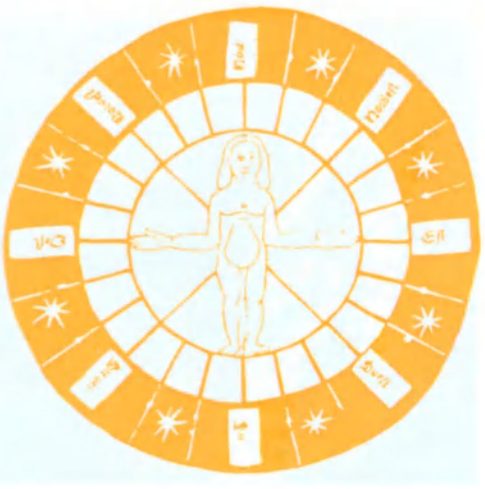
Traditional knowledge is based on revelation, contemplation and direct perception of reality. In contrast, scientific knowledge (at least in its contemporary form) is based on the understanding of reality through mental processes, through logical and mathematical constructions. Traditional knowledge presupposes the non-involvement of mental processes, through the suppression of ordinary logical associations, whereas scientific knowledge is possible precisely because the mental faculty is activated as intensely as possible.

Traditional research assigns great importance to the body, sensations, feelings and faith, while scientific research excludes the researcher's own body, sensations, feelings and faith from the field of observation and the formulation of laws. The only instrument belonging to the human body that is tolerated by science is the researcher's brain and its inherent logical structures that are common to all researchers. Experimental measuring devices are assumed to possess an intrinsic objectivity and a quasi-absolute independence of the researcher's own will.

Traditional thought has always claimed that reality is not linked to time and space: it simply is. The traditional researcher, through long and unremitting effort, deliberately annihilates his own spatio-temporal identity in order to discover his true being, through dissolution in that one, all-embracing reality which, to be known, admits of no separation, no impurity due to projection in space or time. At the other extreme, the scientific researcher is obliged to postulate the existence of a separate objective reality which is necessarily defined in terms of time and space.

Another important difference between science and Tradition resides in the communicable or non-communicable nature of an experiment. Traditional research claims the right to engage in experiments that cannot be communicated through natural language. The traditional experiment is unique and total, and transcends ordinary logical categories. A scientific experiment, on the other hand, is communicable and repeatable. The conditions of scientific experimentation are defined in as objective a manner as possible. A scientific experiment can thus be repeated by any research team equipped with the appropriate scientific instruments. Experiment is even considered to be the supreme arbiter of science. The "argument from authority" does not exist in science (save as a marginal and transient sociological phenomenon). A theory, ▶

Photo from *Images des Sciences* © Albert de Visscher



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Science and Tradition "differ in their nature, methods and final purposes. But they ... converge toward the same centre: humanity and human progress." Above, diagram from 16th-century French treatise on navigation shows location of the points of the compass in relation to the parts of the human body.

"The only instrument belonging to the human body that is tolerated by science is the researcher's brain and its inherent logical structures that are common to all researchers. Experimental measuring devices are assumed to possess an intrinsic objectivity and a quasi-absolute independence of the researcher's own will." In this drawing by the artist Yôsai (1788-1873), the Japanese astronomer Kasuga Ason Manumaro is depicted from the back, with a map of the heavens to evoke his scientific calling.

▶ even if it is of the greatest aesthetic beauty or formulated by the greatest physicist of the age, is unhesitatingly rejected if it is clearly in conflict with experimental data.

Traditional knowledge therefore claims a "right to ineffectiveness" on the level of spatio-temporal materiality and on the level of the directly observable material world. Conversely, science is interested essentially in maximum effectiveness on the level of direct materiality. It is precisely because of this effectiveness that the material life of humanity has been profoundly transformed by the technological applications of the discoveries of fundamental science.

Is there, then, any relationship between science and Tradition?

Einstein's famous dictum: "The most incomprehensible thing in the world is that the world is comprehensible" is often quoted. Paraphrasing these words, it could be said that the only "irrational" aspect of the world is its rationality.

It is a constant source of wonder to scientists in their daily practice to see the harmony between their abstract, logical and mathematical constructions and experimental data. The conformity between human thought and the intelligence concealed in natural laws acts as a third factor in the man-nature relationship, making a ternary entity that exists as a dynamic and inseparable unit. That conformity, an independent factor in the man-nature relationship, explains Einstein's insistence on the role of intuition as a form of immediate knowledge in the genesis of great scientific discoveries. Forgetfulness or ignorance of this third factor seems to be the source of contemporary reductionist schools of thought that proclaim a vulgar, false and static duality.

Traditional experience is, indeed, incommunicable, but it is important to realize that some traditional thinkers feel a need to analyse and explain to others in an intelligible manner what they experienced at the time of the experiment. Describing, analysing, explaining: these constitute a procedure on which science is also built.

Is not faith in the structural rationality of the world the subtle link which binds traditional thought to scientific thought?

The idea of the unity of opposites and the role of discontinuity in the genesis of movement permeates traditional thought. For many traditional approaches (in both East and West), the outward manifestation is bound up with a dynamic process of combat and co-operation, annihilation and creation, eternal movement and eternal transformation, one might even say "eternal genesis". Is this vision of the world not surprisingly close to our own?

Science and Tradition differ in their nature, methods and final purposes. But they can be viewed as two poles of a single contradiction, or as two spokes of a single wheel, which although different yet converge toward the same centre: humanity and human progress. ■

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The human factor in African development

by Jean-Paul Ngoupandé

WHEN the peoples of the developing countries aspire to development, what they really want is to attain the normal condition of any form of human existence, whether collective or individual, namely to be able to choose their course, to be responsible for their destiny, and hence to control all action concerning their lives. In Sartrian terms, they want to be able to act instead of being acted upon.

The firm if inarticulate resistance of the peoples of developing countries to development controlled from abroad is now well known. It is a commonplace to say that the only certain result of twenty-five years' development in the developing countries is that the development graft has not taken. In the great majority of cases the graft is rejected because the populations concerned have a basically conflictual relationship with "projects". Mr Helmut Eggers, of the Directorate-General for Development at the Commission of the European Communities, noted recently that a review of experiments carried out over the years in the field of financial and technical co-operation for development, notably for rural development, revealed the "self-evident truth" that the operations funded were not viable. As a large number of such opera- ▶

Photo Abbas © Magnum, Paris

In May 1986 the United Nations General Assembly met in special session at ministerial level "to consider in depth the critical economic situation in Africa". On this occasion Unesco published a document entitled* Getting to the Roots of the Problem, *which describes what Unesco is doing, within its fields of competence, to help to build African economies on solid and lasting foundations. The introduction to the document draws attention to the growing acceptance of "a conception of development which goes beyond the mere listing of parameters relating solely to growth and material goods", and which takes human fulfilment as its ultimate goal. The document emphasizes that a development process of this kind is not feasible "unless account is taken of the cultural dimension, which in turn implies taking account of, and even if need be transcending and integrating into the movement of innovation, the sociological characteristics and deep traditional roots of the peoples concerned." Left, oil-rig worker at Port Harcourt, the port of south-east Nigeria in the Niger Basin.

▶ tions do not survive when external funding comes to an end, their impact on the capacity for self-development of the rural groups concerned is insignificant, non-existent or negative.

This can be verified in the field. "Development aid" leads to scenes of rack and ruin: miracles of engineering which are now abandoned factories; rusting machines which in some cases need only a fuse or a washer to work; land recently occupied by a "project" overgrown with vegetation; the spectacle of desolation which follows the departure of the "experts", sometimes giving the landscape of a developing country the strange appearance of an old industrialized country whereas in fact industrialization has only just begun.

The explanation is that since man is fundamentally free, he aspires to be himself, and it is useless for anyone else to try to make him happy *against* his will.

Human fulfilment, the achievement of freedom in the field of economics, means being able to choose what one produces, to know *why* one produces it, and to know how it is produced. The cultivation of millet, corn or sorghum presents no problems to peasants in the least developed countries because these are the crops they want, and because they know the practical reasons for growing these crops. If on the other hand they must be continually persuaded to grow cotton, tobacco or even coffee, it is because these crops are imposed on them and they see no clear advantage for themselves in growing them. It is significant that the most stubborn resistance to development controlled from elsewhere comes from rural people: they are the ones who have been the least affected by the great cultural changes effected by contact with industrial societies, and they are therefore the ones who aspire most to be themselves. As they account for between 75 and 90 per cent of the population in the developing countries, it is clear that they represent a tremendous force of inertia.

In the least developed countries, which are primarily agricultural countries, the impact of this inertia on production is obvious: most of the labour force is unenthusiastic and feels unconcerned by its own work. And if famine is again invading these countries today, in these times of overproduction, it is not only because of worsening climatic conditions. The vagaries of the weather are nothing new to Black Africa. Far be it from us to insinuate that there was no famine in precolonial Africa.

Photo Sebastian Salgado jr. © Magnum, Paris

"Despite the development policies which she has followed, Africa remains the continent where per capita income ... is the lowest ... Everywhere the basic needs of mankind ... are very poorly met ... In our opinion, it is much less the theory and the policies of development which are in question than the institutional frameworks in which they are implemented (instability of exports, high degree of economic balkanization and nationalism, excessive facilities accorded to transnational corporations, etc.). In Africa these conditions act as a brake on growth and lead to increasing dependence on developed countries ..." (Science économique et développement endogène, ***"Economic Science and Endogenous Development", Unesco, 1986). Right, drought in Mali, 1983. On the banks of the Niger River, men hack at the dried out soil in order to build dams to capture hoped-for rainwater.***

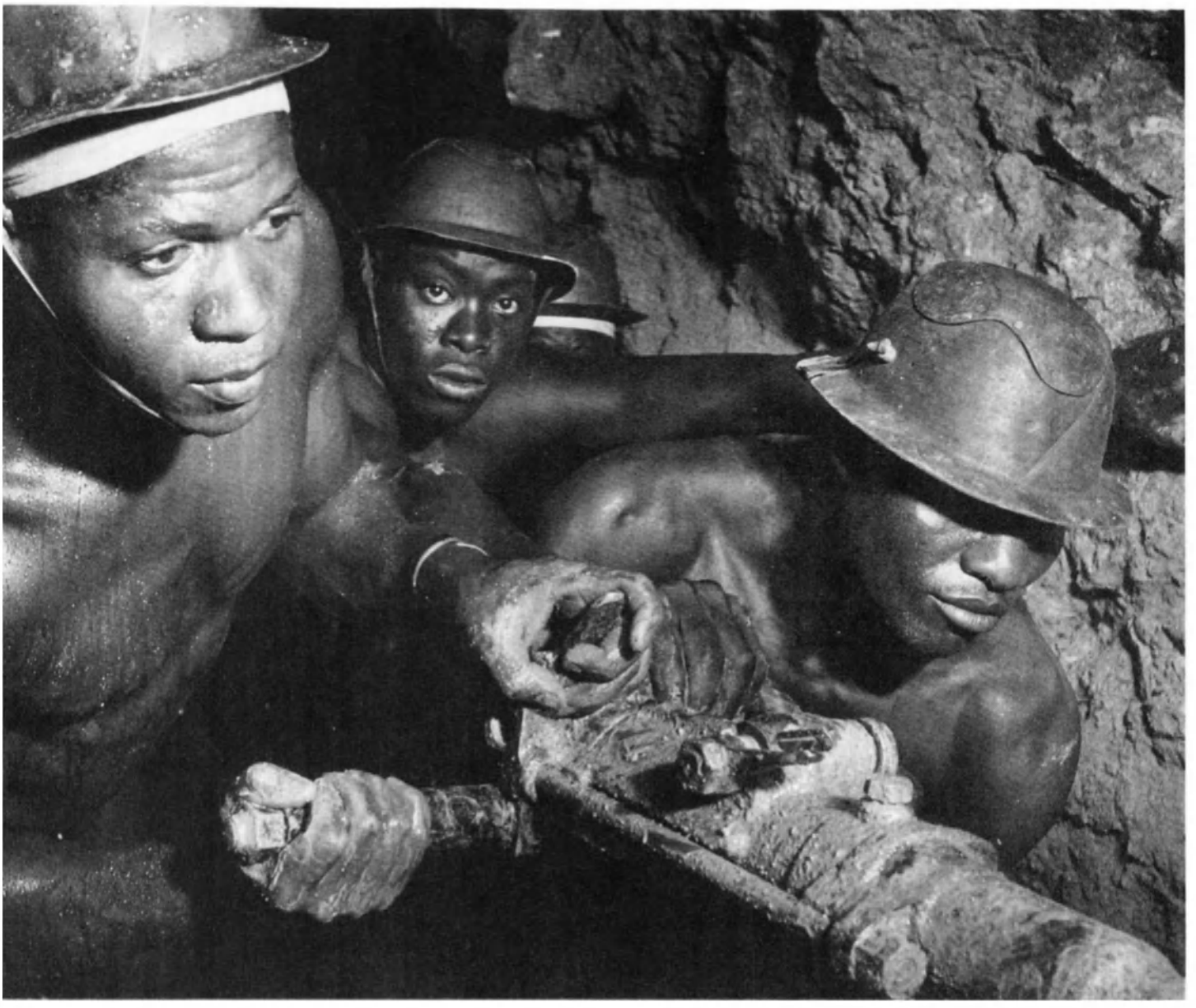


Photo George Rodger © Magnum, Paris

However, as the twentieth century draws to a close, with the world having achieved an unprecedented level of technological progress, no one would suggest that climatic difficulties alone can explain famine. There are admittedly civil wars which disrupt production because of insecurity, mass population movements and the depletion of peasants' reserves in order to feed armies. But the most important thing in our opinion is the lack of motivation of peasants to grow crops and observe production standards which they have not chosen. Endemic famine or chronic malnutrition in countries where there is neither civil war nor extreme variations in climate, abundantly prove that the human factor is still crucial.

In a country such as the Central African Republic the drift from the land occurs chiefly in regions where the old cash crops inherited from colonial times are dominant. These crops are identified in the peasants' minds with forced labour and the overseer's whip, even though these came to an end twenty-five years ago. Cotton-growing areas have been so drained of labour that output has been affected, since virtually none but elderly workers remain. A recent survey carried out by a Bangui young people's newspaper revealed that the vast majority of the young would prefer to starve to death in the capital rather than return to the countryside.

Food aid also tends to make both consumption and production dependent on external factors, and thus removes responsibility from indigenous producers. Food aid is closely related to the key problem of self-sufficiency in food production. Theoretically this is a goal sought by everyone, but the conditions for achieving it are closely linked to the mobilization of the rural world.

Food aid alienates the peasant and places him in a situation of enforced inferiority, powerless in the face of his destiny, his environment, and nature. It will be argued that such aid makes it possible to save human lives which would be inevitably lost without it. This is true; just as it is also true that the by no means well-off men and women in Europe who make the effort to show their human solidarity are not all inspired by Machiavellian motives. No one doubts the good faith of donors who have nothing to do with political or economic "decision-making" circles. However, food aid has a serious long-term effect on the viability of African agricultural production, which has become accustomed to relying on the outside world to bridge gaps in output. Still worse is the harmful effect of this ▶

"In the least developed countries of Africa those responsible for promoting development have been reduced to such a state of enforced inferiority that they are caught up in a vicious circle. If development is to be achieved, it must be achieved by the Africans themselves; but since the Africans are still suffering from the after-effects of submission, and have no confidence in their own human resources, it follows that the aim of development must be to free them from this psychological block." Above, workers in a Tanganyikan diamond mine, 1948. The country gained independence in 1961, and together with the former Sultanate of Zanzibar formed the United Republic of Tanzania in 1964.

African agriculture: the road to recovery

The Food and Agriculture Organization of the United Nations (FAO) issued, on the occasion of its 14th Regional Conference for Africa in September 1986, the results of a far-reaching study on the food and agricultural crisis in Africa which the FAO initiated in 1984. The study, *African Agriculture: The Next Twenty-Five Years,* provides a close analysis of the causes of this situation and recommends practical measures that would make a recovery feasible.

Contrary to widespread belief, drought is not the only cause of the suffering and famine which affect so many African countries. The problem is rooted in a crisis which has been undermining agriculture for over twenty years. Per capita food production has decreased by almost 20 per cent since 1961 and, although they were practically self-sufficient ten or twenty years ago, most African countries are today incapable of feeding themselves. If current trends persist, the food situation in Africa by the year 2010 will be even worse than it was at the most critical juncture of the 1983-1985 famine (see Figure 1).

Six factors, according to the authors of the FAO study, are mainly responsible for the crisis: a bias in government policy against agriculture (to which most countries devote less than 10 per cent of their budgets); high population growth rates (with an urban population growing much more rapidly than the rural population); a decline in the rate at which arable land and harvested area are being developed (see Figure 2); a lack of technological change, which is leading to a widespread stagnation or even decline in crop yields; accelerated degradation of the environment; an external economic environment that is making it more and more difficult for most African countries to balance their budgets.

Many remedies have been suggested, including various forms of aid to farmers (notably incentive policies), institutional reforms and the improvement of infrastructures (roads, railways, ports). Special attention is being given to the protection and development of natural resources.

To halt the degradation of agricultural land, for which man is the main culprit, action has already been taken in a number of African countries (including Somalia, Kenya, Malawi, Senegal, Sierra Leone, Morocco and Lesotho) in many cases with highly positive results, suggesting that under certain conditions African agriculture could be more productive than it is at present.

To take one example, on the Mossi Plateau of Burkina Faso, simple techniques of water harvesting have enabled village co-operatives and farmers to bring abandoned land back into production; in several villages rice yields have doubled. This successful experiment, if it was extended, would allow the exploitation of millions of hectares of potential ploughland in the semi-arid regions of the continent.

Photo © John Vink

When they became independent, most African countries inherited poorly developed transport networks designed primarily to export commodities to the home ports of the former colonial powers. Today African agriculture urgently requires an efficient infrastructure for supply and distribution. Above, working on a railway line at Ouagadougou, capital of Burkina Faso.

Figure 1
Self-sufficiency if trends continue*

*assuming projected deficits are met by net imports

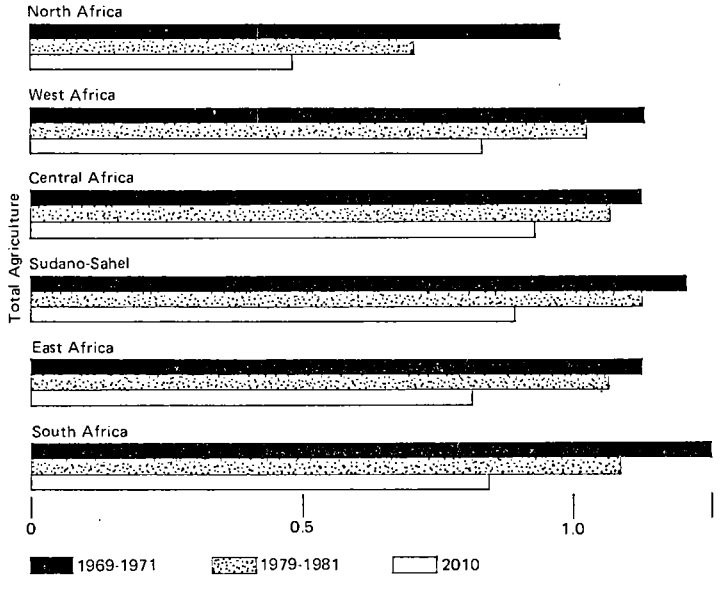
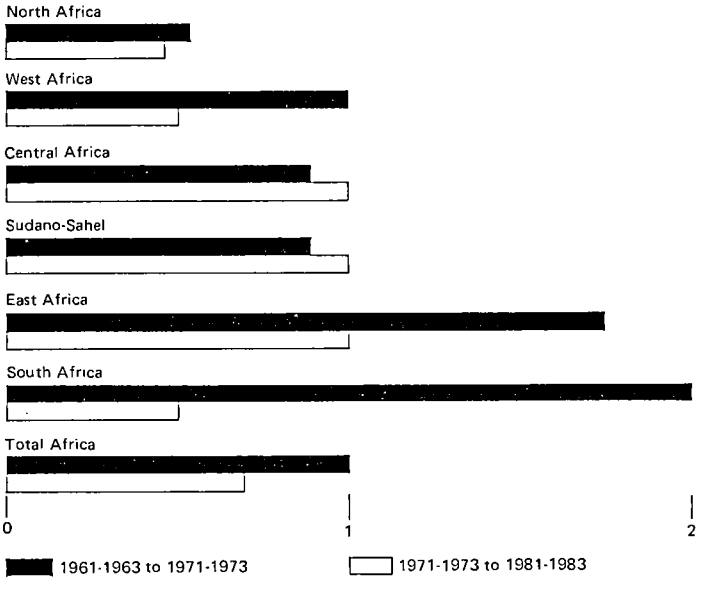


Figure 2
Trends for arable land development (percentages)



Source: *African Agriculture: The Next 25 Years, Main Report,* © FAO, Rome, 1986

dependency on the creativity of the African peoples and their determination to cope with the vagaries of nature.

Increasing numbers of Africans now think that nothing is more degrading than to be in permanent receipt of food aid and believe that Africans themselves should be able to meet their basic food requirements. It is understandable to call for international solidarity when an exceptionally serious disaster occurs, but the continued showering of African countries with foreign foodstuffs can give no cause for satisfaction. It is only by fully pledging their labour and their responsibility, and by being constantly faced with their responsibilities as human beings, that Africans will overcome their terrible century-old handicap of defeatism, of lack of confidence in themselves and their destiny.

In the least developed countries of Africa those responsible for promoting development have been reduced to such a state of enforced inferiority that they are caught up in a vicious circle. If development is to be achieved, it must be achieved by the Africans themselves; but since the Africans are still suffering from the after-effects of submission, and have no confidence in their own human resources, it follows that the aim of development must be to free them from this psychological block.

One of the least frequently mentioned factors of dehumanization is the slave-trade. Its extent, duration and especially its cruelty were such that it has left immeasurable psychological after-effects in Black Africa. In terms of extent and numbers of victims, its impact affected the entire continent; it lasted for more than three centuries and was characterized by great brutality. Folk imagery still vehicles the phantasms born of the shock of this experience. The slave trade also explains the limited territorial settlement of populations which for more than three centuries were continually forced to flee. This led to the incessant migratory movements in the seventeenth, eighteenth and nineteenth centuries which, in certain regions of Central Africa, historians find it impossible to disentangle.

Fear has become a kind of second nature to people who live in a climate of permanent insecurity. The continuing oppression of post-colonial Black African dictatorships maintained and sometimes increased this fear.

This then is the post-colonial Black man, who is now responsible for promoting development: he is traumatized; he has lost confidence in himself, in his destiny, in his human capabilities.

Any talk of development which today fails to take account of this terrible burden borne by post-colonial Black Africa is simply preaching in the wilderness. The impossibility of achieving economic take-off brings us back to the most important question: the human question. Psychological blocks, the after-effects of traumatism caused by aggression, oppression and humiliation, are the first obstacle to mobilization for development. Statistics, projects, plans, bilateral or multilateral aid have for twenty-five years come up against this insurmountable wall of human despair.

It is possible to break this vicious circle by stating the problem of development in a different way from that defined by economists. In economic theory, development means increasing material production in order to lead to the liberation of man. To posit this relationship of cause and effect between the production of material wealth and emancipation is to enter a vicious circle. But by positing development as both material increase and human emancipation, in our view it becomes possible to avoid this vicious circle.

By transforming their environment in order to increase material production and improve their living conditions, people transform themselves, and take one step towards their liberation. Emancipation is not simply the outcome of the material results achieved, nor simply a result of the material wealth provided by development; it is a part of the very process by which Black Africans change their material condition, and therefore goes hand in hand with the process of material production.

But this is only possible on one vital condition: that the process of material production should be initiated and conducted by the Black African himself. This means that by his own efforts, by trial and error, the experience he acquires and the progress he makes, Black African man will gradually learn to know his own capabilities, and thus regain confidence in himself when he realizes that he is capable of creating. It is from the ordeal of success or failure, whether immediate or in the long term, that he will learn, and through that ordeal he will transform himself. ■

JEAN-PAUL NGOUPANDE *is the Minister of Education of the Central African Republic and former head of the faculty of letters and human sciences of the University of Bangui. The present article has been extracted from a study "The Aims of Development in the Context of the Least Developed Countries", which was presented to a specialist meeting on "The Aims of Development", held in Budapest, Hungary, in October 1986. The meeting was one of a series of seminars on philosophical aspects of development which Unesco has organized since 1978.*

The analysis of development processes in different social and cultural contexts is one of Unesco's major preoccupations. In November this year an international meeting of experts is being held at Unesco's Paris HQ on the theme of "Poverty and Progress". The meeting, organized by Unesco in co-operation with the United Nations University, will examine from a wide range of viewpoints the problems of poverty, marginalization and exclusion caused by certain development processes. Right, coal-mining village in Bihar, one of India's leading mineral-producing States.

Photo © International Labour Office

Scientists and peace

A Conference on the theme "Scientists on the Problems of Peace and Prevention of Nuclear War" was held in Moscow from 27 to 29 May in the context of the International Year of Peace. Those attending the Conference included not only Soviet delegates but also over a hundred scientists from 44 countries representing all the continents.

Representatives of Mr. Javier Perez de Cuellar, Secretary-General of the United Nations, and of Mr. Amadou-Mahtar M'Bow, Director-General of Unesco, emphasized the importance of a conference whose theme, as the representative of the Director-General of Unesco pointed out, "epitomizes the struggle in which mankind is engaged to save our planet and humanity from a nuclear holocaust."

The ultimate aim of the Conference was to work towards the total elimination of the nuclear arsenal and other means of mass destruction before the year 2000, an aim which, like all the initiatives stimulated by the International Year of Peace, has been warmly welcomed by world opinion. The proposals put forward by the Soviet Union in order to attain this objective were spelled out in detail in a report entitled "For a world free from nuclear arms in the 21st century", presented by Mr. Anatoly Dobrynin, Secretary of the Central Committee of the Communist Party of the Soviet Union.

After a report on the activity of the Committee of Soviet Scientists for Peace and against the Nuclear Threat, presented by the Committee's chairman, Mr. Evgeniy Velikhov, a number of study groups examined certain topics in greater depth, notably "Prevention of the militarization of space and international co-operation", "Current problems of nuclear disarmament and the limitation of conventional armaments" and "Probable consequences of a nuclear conflict".

New information presented by Mr. Georgy Golitsyn, a Corresponding Member of the USSR Academy of Sciences, speaking on behalf of a large group of Soviet scientists, brought the "nuclear winter" scenario (see the *Unesco Courier*, May 1985) into clearer focus. In the event of an atomic war, the discharge of soot after nuclear explosions into the upper layers of the troposphere and into the stratosphere would in themselves be enough to cause serious climatic disturbances.

Sir Frederick Warner (United Kingdom) presented the results of research into the environmental consequences of nuclear war, carried out as part of the ENUWAR project of the Scientific Committee on Problems of the Environment (SCOPE) of the International Council of Scientific Unions. Some 300 researchers from 30 countries are taking part in this work.

One speaker, Mr. B. Raushenbakh (USSR) pointed out the dangers for humanity inherent in the increasing computerization of the technologies of destruction. Mr. S. Gustavsson (Sweden) stressed the need to develop further international legal safeguards with a view to avoiding nuclear war. Messrs R. Khan (India), O. Obassanjo (Nigeria), T. Berendt (Hungary) and I. Ivanov (USSR) emphasized the disastrous consequences of the arms race, especially for developing countries, while Mr. A. Fokin (USSR) drew attention to the fact that chemical weapons, which are less complex and costly than the nuclear arsenal, are within reach of a larger number of countries and that their banning is all the more urgent. Finally, Mr. B. Sendov (Bulgaria) recalled that peace education for the young generation was one of the keys to future peace.

At the close of the Conference, an "Appeal to the Scientists of the World" was adopted. The only way to save humanity, it states, is that of genuine disarmament and international co-operation in every field of constructive action: from space exploration to the exploitation of the ocean depths, from environmental protection to the non-military use of atomic energy, from the solution of the world hunger problem to the elimination of epidemics and disease. ■

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To commemorate the 40th anniversary of the founding of Unesco, the Soviet Union has issued a series of stamps entitled "Unesco Programmes in the USSR". The three stamps at left are dedicated (in ascending order) to the intergovernmental programme on Man and the Biosphere (MAB), to the International Geological Correlation Programme (IGCP) carried out jointly by Unesco and the International Union of Geological Sciences, and to the International Hydrological Programme (IHP). The other two stamps feature (below) computer science and (above) The Intergovernmental Oceanographic Commission (IOC).

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International Voluntary Service campaigns for Unesco and the *Courier*

Ever since it was founded on Unesco's initiative in 1948, the Co-ordinating Committee for International Voluntary Service (CCIVS), based at 1 rue Miollis, 75015 Paris, has been committed to strengthening international solidarity between the world's young people and to providing a forum for those wishing to create a climate favourable to peace.

The CCIVS is composed of 110 organizations which, with their local branches, are present in more than 100 countries of North, South, East and West. Through its wide range of activities and its publications, the Committee plays a leading role in promoting many kinds of voluntary service throughout the world, including workcamps, intercultural exchanges, literacy campaigns, training programmes, activities for the protection of the environment and the cultural heritage, and for rural development.

As a contribution to the International Year of Peace, and a follow-up to International Youth Year, the CCIVS has organized in co-operation with Unesco, a conference which will be held in November 1986 in Accra (Ghana) on the theme of "The Mobilization of Rural Youth for the Promotion of Peace, Disarmament and Development", as well as the 23rd Conference of voluntary service organizers, the theme of which will be "Working Together for Mutual Respect, Co-operation and Peace".

In order to create direct contact between Unesco and the public, the CCIVS has launched a campaign, on the occasion of Unesco's 40th anniversary, for a thousand young people to subscribe to the *Unesco Courier*.

The CCIVS has appealed to other non-governmental organizations to commemorate Unesco's 40th anniversary by launching similar campaigns, in order to collect as many subscriptions as possible to Unesco publications. ■

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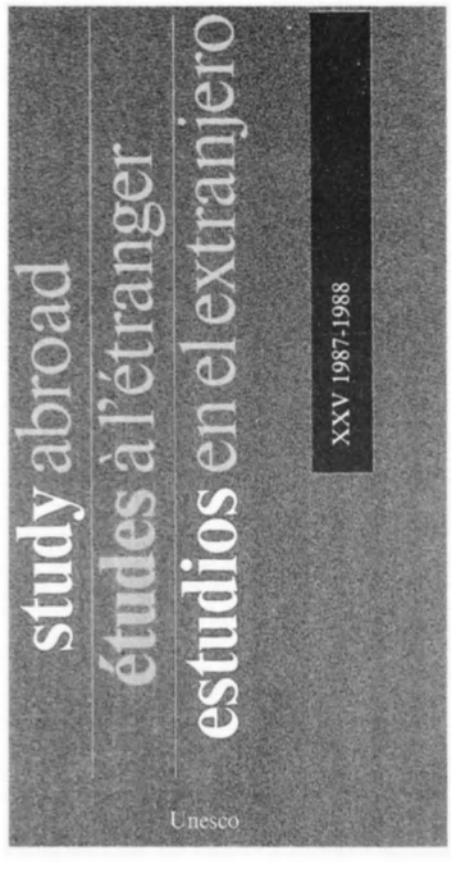

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This seventeenth-century Gobelins tapestry was executed from a cartoon by the Dutch painters Albert van der Eeckhout and Frans Post which had been presented to Louis XIV by John Maurice of Nassau. It shows an Indian on horseback wearing a poncho, a somewhat fanciful llama with claws instead of hooves, and a dappled horse in an exotic landscape where the vegetation and animal life are typically Brazilian. Although there were already Blacks in Brazil, the one shown here is not depicted realistically but is a purely decorative figure of the kind found in many European tapestries of the period. Background information for the cartoon had probably been assembled during a journey to South America which the two painters made with John Maurice of Nassau. The tapestry is today preserved at the Mobilier National, Paris.
(See article page 11).